

A  
TREATISE  
OF *K. 11. 23*  
Wounds.

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BY  
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ONE OF  
His Majesty's Serjeant-Chirurgeons.

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THE EAST



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Reader,

**H**AVING spent betwixt Thirty and Forty years in a plentiful exercise of my profession, and that in different Countries and Places, where I have been eye-witnes of the variety of methods in Chirurgery, I think it is no great vanity for me by this time, to pretend to something of experience in the Faculty: Which how difficultly it is attained, I not only can testifie by my own frequent misadventures in this Employment, but also do appeal to all others that have undertaken the Art. Vita brevis, Ars longa, Experimentum fallax, Judicium difficile, said the great Father both of Physick and Chirurgery, of which it is true, that the former hath more of uncertainty, because the diseases are hidden as well as their causes, and little of either lyeth open to the Eye: Yet ours also

## To the Reader.

meets with many great difficulties, and very dubious cases, such as will sometimes puzzle an old Chirurgeon, but a young one would be quite lost in, without the assistance of an expert Guide. This is the Reason why I think all men, that have arrived to any thing of Knowledge or Experience, are obliged by the general debt they owe to mankind, to leave behind them such Monuments of it as may be useful to posterity. Thus our Art at first grew, when Apollo's Temple at Delphos received in Tables the Histories of particular cures consecrated by the Votaries, and when Fathers bred up their Children in their own profession, faithfully delivering to them such Rules and Maxims, as their frequent observations had both suggested and confirmed: Insomuch that the Art became Hereditary, and propagated in families. And it is the opinion of some learned men, that the so much admired Volume, that goes under the name of Hippocrates, was the product of such a succession of Communications, there being no less than seven of that Race that were in their several generations eminent that way: The world is since grown bigger, and the Art it self much enlarg'd, by the great accession both of Diseases and Remedies; insomuch that Medicine, which heretofore was the work of one man, is now  
split

## To the Reader.

*split into three parts, the Physician, Chirurgion, and Apothecary; each finding work enough for the whole man. Yet with all this encrease of Knowledge we do but encrease sorrow, and after whole Ages spent in Chirurgical and Medical Disquisitions, we find little advance towards the certainty of Cure, or the commanding of help in the necessities of nature: A great Reason of which I take to be the excess of Employment, or (which is worse) dissingenuity in great Practitioners, who have not often been free in communicating their Observations to the world, but have rather left that task to Sedentary men, who having Chairs in Universities, have more indulg'd themselves in the speculation of the Art, than in a diligent attendance to matter of fact; who having reduced the Art into method, have spoken rather pursuantly to their own Rules, than agreeably to our Experience: Hence it is thought, that from Galen's days, who first drew Physick into a strict Body, we have found little Augmentation of Knowledge, till some bold adventurers in these latter Ages have made some fortunate Essays at farther discoveries.*

*For my own part, I shall not pretend to new Inventions, only what I have, I do here*

## To the Reader.

bring as my Mite to the Treasury of other mens Learning; affecting more the praise of fidelity and easiness of being understood, than of having enriched my Faculty with any far-fetcht or novel additions: Our Art is rich enough already in that kind, Nature having plentifully supplied us with a Materia Medica in every field; nor need we any other Instructions than in the use of that Store we find ready provided for us. In this such men as have spent their whole Time and Parts in a perpetual Practice, are the best Instructors, of which, whether I deserve to be reckoned for one, the ensuing Treatise must tell you: It being an Essay to a further work, which if this succeeds, may hereafter be offered to the use of the world. Why I have begun with a Treatise of Wounds, will easily be guessed by those who know me to have spent so much of my Time in Armies and Navies, in both which it was my chief business during my abode in that Employment. I have observed many great Errors committed in dressings, very much to the damage, and often to the destruction of the Patient; to which notwithstanding custome and frequency of example have given countenance. This very consideration did more excite me, when I once understood his Majesties design  
of

## To the Reader.

of a Navy Royal, where many young Chirurgeons being employed, and my Sickneſſ of Body and my preſent relation to his Majeſty render'd me not ſo fit for attendance there, as both my Genius and my deſire of ſerving his Majeſty makes me inclinable; I thought it my duty to aſſiſt, at leaſt with ſuch directions as my Pen will afford, faithfully delivering thoſe methods of Cures, which I my ſelf have practiſed with ſucceſs, and by giving early notice of ſuch Errors as have been obſerved by me, either in my own, or other mens practice, arming them as well as I could againſt all miſfortunes in the Faculty. I have therefore choſen the method that ſeemed to me the moſt eaſie and facil, and moſt accommodated to practice, ſtill confirming Rules by Examples, and thereby illuſtrating what ever might elſe ſeem obſcure. Not that I was ignorant how hard a taſk I have undertaken to ſpeak of things of this nature, whiſt ſo many both Chirurgeons and Patients, who are therein concerned, are yet alive; which is the reaſon why in ſome difficult caſes, I have choſen to give ſo few Inſtances, as making uſe only of ſuch as I was either concerned in my ſelf alone, or ſuch as might give leaſt offence to others, which I have avoided as carefully as I could: For which cauſe I have made choice of ſuch obſerva-

## To the Reader.

servations as may be rather for the Readers instruction than my own credit, mixing as well my unprosperous attempts as my successful administrations.

The Lecture of Fractures was first written and read in the Chirurgeons and Barbers-Hall, and had been pursued by the rest, had not the Fire prevented us, and that occasion given a stop to a laudable custome. The Treatise of Gun-shot was afterwards compiled, and that of Simple wounds last, one thing begetting another, but when they were done, I put them into that order which did seem most agreeable to the design I now have in publishing them. I mention this here, that if any thing happen to be preposterous in the several Treatises, your charity may be furnished with an excuse for it.

It is true, that this discourse (the former part of that of Simple wounds excepted) were done long since for the use already mentioned, though since pollisht and fill'd up; several other little things, as of Tumors, Fistula's, and Lues venerea (all which ly rough cast) and may come to light, if the success of this small Tract encourage me: I have taken pains in one part of Tumors, which my relation to his Majesties service hath engaged me, viz. the Kings-Evil; of which

## To the Reader.

*which I wonder so little hath been written by the Chirurgeons of the English and French Courts, both which Kings do so publickly exercise themselves in the Cure of it: And though so many thousands of people pass through the hands of the Chirurgeons to be judg'd of, and presented to their Princes, yet excepting that of Laurentius, and an imperfect piece or two of our Countrey-men, there is nothing appears in print concerning it. I therefore thought it worth my pains to write what I have observed in that disease, hoping withal to give so much credit to our Society in this Nation, as to let the world know, we do not all spend our time in talking in Coffee-houses, and drolling over the Accidents that befall one another in our profession; but that some of us at least make it our business to Improve our Faculty and to give Strangers, pretenders to great things in Chirurgery, that come over to us (and are so Wellcome to our Gentry, only upon the account of their being Strangers) occasion of understanding, that they may whilst they are here, traffick for Skill as well as money, and carry that back with them, which may give the world some opinion of the Knowledge and Experience of our English Artists, as well as of the liberality of their Patients.*

Reader,

## To the Reader.

Reader,

*I do pretend to have spent my time in Armies, Navies, and Cities, not in Universities; Nor to have been much conversant in Books, through my constant Employment in, and the little leisure I had from my Profession, till my want of health of late years enforced me to make them my diversion. Therefore thou must not expect a nice exactness in the disposition of the parts of this Book, which it may be from a perfect Logician thou wouldst; yet I hope I have done so much that way as will excuse me from being altogether rude, and what it wants in that kind, will possibly be made up by its accommodation to the Chirurgeons hand in dressing, to which I have wholly applied my self; as thinking it more profitable for the persons, to whose use I design it. The whole is contracted into a little bulk, and yet I hope nothing is wanting that is necessary to thy Instructions; It becomes by this means cheaper and more portable, and if those conveniencies be accompanied with a sufficient perspicuity in delivering, and fulness in handling what I undertook, it is all that is desired by thy Friend to serve thee,*

R. W.



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## CHAP.

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## CHAP. I.

### *Of Wounds in General.*

**A** Wound is a solution of continuity in any part of the Body, suddenly made by any thing that Cuts or Tears, with a division of the Skin. A Wound defined.

THIS definition differs much from what is usually delivered by Authors, and it is fit it should, for they generally defining a Wound by a solution *in parte molli*, do thereby exclude a Cut made into a Bone; as that into the *Cranium* by a Pole-Axe, &c. which why it should not be called a Wound I know not? Secondly, I say it is made by any thing that Cuts or Tears; other Authors define it to be made by an external Instrument, &c. How then do they call that *fracturam cum vulnere*, a fracture with a Wound, where the Bone from within makes the Wound, and thrusts it self quite through the flesh? *Sennertus* adds to his Definition, that it be done *à re secante & acutâ*; yet he reckons those for

B                      Wounds

Wounds that are made by Bullets, although it be Canon-shot.

I do therefore think it fit to make my definition more comprehensive, and to take in whatsoever makes a sudden solution of continuity, at least immediately and by it self, on what part soever it lighteth; so a Cut into a Bone is a Wound, tearing the Flesh, Nerve, Sinew, Tendon or Cartilage, by Bullet, Stone, Splinter, &c. is a Wound; only I add this restriction, that the Skin must be likewise divided: By which last words I exclude fractures that come not through the skin and contusions, if the exterior parts be continuous. But by the word Skin, I understand not only the external *cutis*, but also the Inward membranes of the Gullet, Ventricle, Guts, Bladder, Urethra, Womb, all which are capable of Wounds from sharp Instruments, whether swallowed or thrust into them.

Differen-  
ces of  
Wounds.

A Wound thus defined admits of many differences, of which I know none that can be properly called essential. Great and small, deep and shallow, wide and narrow, streight and crooked, round and Angular, are but Accidental differences. Distinctions taken from the Weapons whether sharp or blunt; Sword, Rapier or Bullet; Cut, prick or Tearing, are likewise Accidental: Those that look most like essential differences are they which are taken from the subject in which the Wound ( which is it self but an Accident ) inhereth, *viz.* from the Flesh, Skin, Brain, Nerve, Tendon, Artery, Vein, Gristle, Bone, &c. All which being the several subjects of Wounds may well be allowed to specify them, and so much the rather, because from the nature of them we raise our greatest Indications

cations of altering the method of Cure. To this head may also be referred the division of them into *Simple* or *Compound*.

Wounds are in themselves so visible, that they need no general marks to be known by. But the peculiar affections of the particular parts hurt, and the methods of discovering what Inward part is Wounded, by observation made of the symptoms that happen, are fully handled in the Treatise of Gun-shot-wounds, to which I refer you: And not they only, but the prognosticks also are there delivered, in wch a Chirurgeon ought to be well versed, lest through ignorance of them he undertake the Cure of Wounds that are mortal. I therefore have translated them to that Treatise, because the difficulty of Knowing them in cases of Gun-shot, is much greater than in those of other Weapons. The greater symptoms likewise, as *Gangrena*, *Paralysis*, *Spasmus*, are there distinctly treated of, as being more frequent and important in Gun-shot-wounds than elsewhere; *Hemorrhagia* are spoken of in this present Treatise.

Signs and  
prognos-  
ticks.

Symp-  
toms.

As to Intentions of Cure, *the Wound being a solution of continuuity* doth require to be made One again. Unity being the perfection of whatsoever hath a being. To effect this, is the work of Nature and Art: both must mutually joyn their helping hands, and unless both the vital faculties and nourishment of the part do assist the Art of the Chirurgeon, it will be lost labour, here must be a joynt meeting and agreement of all in one.

Intentions  
of Cure.

In *Simple* Wounds the Chirurgeon is to afford his assistance Five manner of ways, the omitting

## Of Wounds in General.

of any of which will render him negligent or ignorant in his Trade.

1. *The first is in careful and diligent taking away all such extraneous Bodies, as by their interposition may hinder the true Agglutination of the disjoyned parts, whether they be concrete Bloud, Hair, Sand, Dust, pieces of Bones, Cartilages, or pieces of the Weapons, Rags, &c.*
2. *The second is performed in bringing the Lips of the Wound even together which were separated.*
3. *The third is in retaining the Lips so brought together, that they may by Consoliation be restored to their former Figure.*
4. *The fourth is in conserving the Temperament and Natural Heat of the part in order to Union.*
5. *The fifth is to prevent ill Accidents, and to correct such as have already seized on the part.*

What is  
required  
in Com-  
pound and  
Contused  
Wounds.

Thus much is required of us if the Wound be only *Simple*; but if it be a *Compound* Wound with loss of substance, or Contusion, then he hath somewhat more to do: as where there is loss of substance there he must assist Nature with his *sarcotics*, for regaining what is lost: And where there is Contusion, there he must promote the turning what is Contused into *pus* or Matter, which must be performed before there can possibly be Re-union.

The First  
Intention  
in taking  
out Extra-  
neous Bo-  
dies.

As long as there is *Alienum quid*, some strange Body or different substance to keep off the Union, you must not hope to make any Cure of a Wound; therefore if any such be to be drawn forth, before you attempt it, consider seriously; first whether it can be done or no; secondly, whether safely.

For first, sometimes the Weapon sticketh so fast,  
that



that by no Art it can be extracted ; then it is of necessity to be left to Nature, who this way sometimes worketh miracles : *Mercatus in Lib. Institut. Chirurg.* says, sometimes pieces of Weapons sticking so fast in the Inward parts have lain hid under the cicatrized Wound, and have a long time after upon the Apostematation of the part come forth of themselves.

Secondly, You are to consider whether you may with safety pluck out the Weapon or no ; some will live a day with the Weapon in their Bodies, which would expire upon the moment of extraction ; but if your judgment suggest to you that the Patient is recoverable, make haste out with it before the part be inflamed, or else you must stay until digestion.

If the Weapon have not pierced deep, and through great Vessels and Nervous places : If the part opposite be full of Veins, Arteries and Nerves, or have a Bone in it over against the Wound ; If there be no great fear of Laceration, pull it out the same way it went in ; for the effecting of which, our Masters have left us variety of Instruments, the figure and usage whereof you may see in *Sculptetus*. But if the point of the Weapon have pierced above the half way, and there be no Bones nor notable Vessels to hinder you, ( here is use of your Anatomy, and exact Knowledge of the parts ) either thrust the Weapon through, or make way for it by incision on the contrary side ; but beware the Weapon be not too big, lest you do make two large Wounds for one.

If the Weapon stick in the Bone, move it up and down to loosen its point, and then pluck it out ; but in case it will not move, cut away the Bone before you extract it.

Which way the Weapon is to be drawn out.

Weapon stuck in a Bone.

Weapon  
stuck be-  
tween the  
Joints.

If a Weapon be fastned betwixt two joynts, make an extension of the parts both ways, as it is the manner in Fractures and Dislocations, that so the Tendons and Ligaments being Elonged, the Weapon may with more ease come out; but do this with moderation, lest you break some notable Vessels, and a flux of Blood or some ill Accident befall you as you extract it. It will be necessary in this work that you consider the Position the part was in when the Wound was Inflicted. *Gesner* hath a story in his *Observ. de Chirurgia dignitate & praestantia*, of a Chirurgion, who when he could by no means get forth an Arrow, asked the wounded Patient in what Figure of his Body he received the Wound, understanding it was done on Horseback, he placed him in a riding posture, and immediately drew out the Weapon.

The Weapon thus drawn out, cleanse it from Rags or ought else, and permit the Wound to bleed accordingly, as you in your judgment shall think fit, you having respect to the constitution and habit of Body, that what is in the small Veins cut asunder may flow out as well to hinder Inflammation, as the generation of much Matter. The Bleeding stay'd, if there be Hair growing about the Wound, shave it off, then wipe away the clotted blood with a Sponge dipt in Red-wine, Oxycrate or Water. But if it stick in the Wound deep, be not too busie with your armed Probe, for thereby you may stir up a new bleeding; whereas this concremented, keeps the Wound warm, and defends it from the outward Air, and by digestion Nature will thrust it forth.

## CHAP. II.

**T**He *Second Intention* is performed by bringing the *Lips of the Wound* exactly together. The Second Intention.

THIS Intention is delivered in a few words, but they are as a Law to be observed, for without that reduction of the Lips a slow and deformed healing follows. Nature hath nothing to do here in bringing the Lips together, that is the sole work of the Chirurgeon, who must not lay a Pledgit, or croud a Dossel of Lint or Tent into a little Wound. No, that is the way to keep the Wound open, and make it painful, whereby defluxions are stirr'd up, the Temperament of the part weakned, and the Cure prolonged; contrary to the Intention of all who have writ of them, and to the practice of our Knowing Chirurgeons here: But amongst the pretenders to that Art, we often meet with such work; particularly in a young man Wounded near *Highgate* in the Back, slanting under the right Scapula, another wound on the Back, and another through the upper part of the other Shoulder, with a long Gash over the forehead, and with other wounds, some whereof not considerable.

Union is to be made.

Observation concerning Dossils in Simple Wounds.

nable : The next day I was carried thither to Dress these Wounds, I found them all distended with Tents and Dossils of Lint, disposed to inflame and swell; the Patient exceeding full of pain: after I had taken out these Extraneous Bodies, my endeavour was to Dress them so, as I might encline their up-heaved Lips to return to their Natural scite; to which purpose I fomented them with Milk, and dressed them with Pledgits spread with my digestive of *Terebinth. cum vitel. ovi*, and Embrocated them with *Ol. Ros.* and by Empl. *è Bolo*, and Bandage with gentle compression I dressed him up, and afterwards here in Town Cured him by *Sarcotics* and *Epulotics*, as in Compound Wounds, a longer work which at first ought to have been by Agglutination: Parts separated and disjoyned are to be brought together gently and equally, that they may touch one another, and so be prepared for Union.

First Gent-  
ly.

This must be done first gently *sensim & sensim*, as *Fallopium* hath it, by little and little, not hastily at one pluck: If the parts be equally soft bring them equally together: if the one soft, the other hard, and not to be moved, but with difficulty, bring the soft part to the stubborn. If the part be grown stiff with cold, as if they had been left in the fields all night, which after a Battel hath often hapned, (and particularly to a merry fellow, a common Souldier, that used to wear an Iron Skull under a Cap, and from thence was call'd by a Nick-name; his wounds were large, and the Lips hardened with the cold, and it was well for him his bleeding being thereby stay'd) in this case you are with Milk or warm-Water, and Oyle to supple them by Fomentation or Embrocation, till you perceive the  
Lips

Lips made soft enough for your purpose, before you endeavour Re-union.

Secondly Equally, that the parts cut asunder may answer one another, as well *in profundo*, as *in superficie*, the Top as the Bottom, Brim to Brim; and, if possible, underneath Vessel to Vessel, that Nature may be in a capacity, of doing its own work, and by vertue of its Balsam, Reunite, Agglutinate, Consolidate, and Heal the Wounds: In all which Intentions she is the Agent, and the Chirurgeon only the Assistant, which Assistance, that it may be more effectually given, we must go on to the Third.

Secondly,  
Equally.

**T**he Third Intention is Deligation, or Retaining the parts so joyned together.

The Third  
Intention  
retaining  
the parts  
United.

For the effecting of this, our famous Masters have left us two principal means, *fascias & suturas*, Rowling and Stitching; to which some, nay most of them added *fibulas*, or Clasps: But I will not put you upon that. If the Wound be small *in parte molliore*, in a fleshy part in the Limbs, and according to the length of the Fibres and Member; if the Wound be Simple, and in a sound Body, you may perform the whole Cure only by *Bandage*, for here Nature will truly act her part by application of Blood and nourishment to both sides indifferently, and finish the *Coalitum* without your further assistance: this is that which gives such credit to the Sympathetick Powder. In the application of this, it becomes every Chirurgeon to be much experienced, in respect of the unspeakable commodities which the whole Art receiveth by them.

Bandage.

By

Their Use.

By them not only are parts dextrously accommodated for Union, but such also as would unnaturally grow together kept asunder, in Burnings, Scaldings, &c. The Finger or Ham would many times grow together, the Chin would grow to the Breast, the Arms to the sides, were they not this way hindred. By them are fluxes averted, and the delapse of humors into the inferior parts forbidden, and being already lodged they are prest out. By these are good Juice wisely forced into parts Emaciated, as if the Right Arm pine away, Rowl up the Left from the hand to the arm-pit, that the blood being prest out into the *Vena Cava*, or rather hindred to flow in so fast by the Artery, may with more eagerness flow into the other side where it was wanting : By these we see great fluxes of blood, large Hemorrhages every day stayed : By them are ill shaped Ulcers brought into better figures, made more apt to be Cured : By them are the force of your application helpt and furthered, they keeping them close to their proper places, where your care hath bestowed them : By them is the true natural form and beauty of the part commonly preserved.

Three sorts  
of Especial  
Use.

Three especial sorts of Fasciation or Rouling pertaining to our present work have the Worthies of our Profession commended to posterity ; the first they term *Incarnatrix* or *Agglutinatrix*, the Incarnative or Agglutinative : The second *Retentrix*, or Retentive : The third *Expultrix*, or Expulsive.

I. Incarnative.

The Incarnative is that which brings the Lips of the Wound together, and conserveth them in their right Figure ; it must be more strict than the Retentive,

tentive, and more loose than the Expulsive, and is the most useful in simple, fresh, and yet bleeding wounds; The manner of performing it is thus,

Have in readiness a Rouler of such matter, length and breadth as I shall anon shew you, Roule it up at both ends firmly to the middle; then lay the middle part of the Rouler on that part which is opposite, to prevent pain and Inflammation, and to cherish the heat of the part, you are, after you have made a turn upon the wound with both ends of the Roulers, to go up with the one and down with the other, and take so many turns about the part, according as may be requisite, for the restraining the flux of blood, or according to the season of the year, to defend from Cold, and yet not keep the wound too hot, for that may weaken the part; you must also be careful that your Bandage be not too hard so as to intercept the Spirits, your Bandage running downwards will press out the matter from the affected part, and by passing upward hinder the Influx of humours and Inflammation.

The *Fascia retentrix*, is used to keep on close Applications about the wound, for cure of the Patient; and these are they that are only in use, in wounds of the Head: there must be a moderation of this Bandage. 2 Retentive.

*Fascia Expulsiva* is performed by a Rouler of one head, the special use of it is to expell matter out of *Fistula's*, or the Sinuous Ulcers, and also to keep out and stay the descent of Humours, and to expel such as have already seated themselves upon the part wounded, or otherwise; I do it in the manner following. 3 Expulsive.  
Begin

Begin in the sound part, beneath the seat of the Humours, and then Rowl hard at first, and by degrees, as you come nearer the mouth of the Wound gentler and gentler; if you will press out the Matter contained in the Cavity about the Ulcer, Rowl loosely a turn or two, then harder, and yet a little streighter, the higher you go to hinder the descent of Humours, but not too hard for fear of harm, *Terminus sit bona laborantis tolerantia*,  
 How hard to bind. *Celsus*: Let it be made with such moderation, as the Patient may well endure.

*Hippocrates de offic. Medica; Vinculorum aliud per se (saith he) Remedio est, aliud iis quæ Remedio sunt subservit*, amongst Ligatures, some of themselves are Remedies, others are servants to Remedies; and true it is in this, for the Incarnative, and expulsive, are in themselves as you may perceive Remedies, and the *Retentrix* the common servant to them all.

4 Other  
 Bandages  
 added by  
*Fallopini.*

To this *Fallopini* in *Tract. de vulneribus in Genere*, adds Four more, viz. *Fasciam disjunctionis*; Secondly, *Fasciam directionis*; Thirdly, *Fasciam facientem Apostema*; Fourthly, *Fasciam prohibentem Apostema*.

1. *Fascia disjunctionis*. by Rowling keepeth parts from joyning together, as the fingers when they are bared of the *Cutis*.
2. *Fascia directionis*, is that which assisteth in making a crooked part straight, or bendeth a part unnaturally straight to his proper figure.
3. *Fascia faciens Apostema*, is that which will procure an Apostem, by summoning the matter up into one Body, which might perhaps dangerously flow into many parts, and those more principal.

*Fascia*



*Fascia prohibens Apostema*, is that which forbiddeth the collection of Matter, and by consequent hindereth the Generation of an Aposteme.

For the matter of your Rowlers, they must be fine and even Cloath, white, clean and gentle, but of strong Linnen without Hem, Seam or Threads hanging by.

Of what Rowlers are to be made,

Let the length be such as the Member affected and the multitude of Circumvolutions require, longer in winter than in Summer: *Hieme* (saith *Celsus*,) *sapius fascia circumire debet, Aestate quoties necesse est*, Rowl on, on, and again in the winter, in the Summer no oftner than needs must; his ground I suppose he had from our great Master, *Sett. 5. Aphor. 20. Frigidum ulceribus mordax, cutem obdurat, dolorem insuppurabilem facit*; Cold nippeth a Wound, makes the Skin hard, and causeth pain, which cannot be digested for the breadth of the Rowler. *Petr. Pigrens lib. de vulneribus*, is most punctual; let them be for the Shoulder, saith he, of six Inches broad, for the Thighs of five Inches, for the Legs of four Inches, for the Arm of three Inches, for the Fingers and Toes of one Inch broad; but this your judgment will teach you to Alter according to the conformation, shape, and posture of parts.

Their Length.

Their Breadth.

Fasten not your Rowler by tying a knot, nor yet sew it upon the wound, or where you cannot easily come at it again, lest you hurt your Patient; quickness and neatness distinguisheth the Workman from the ignorant and unskilful; as the subject is the more noble you work on, so strive to perform your office more excellently, intending not only your profit but decency in the dispatch, that you may please the eye both in the time of, and when you

How to be fastned.

you have done your work. Thus shall you gain credit to your self, and endear your Patient to submit the more readily to your Rules, which is not the least part of the cure.

Sutures 3  
Sorts.

Incarnative.

Restraining or  
Glovers  
Stitch.

Conserver.

The next thing that offers it self for keeping the Lips of the wound together are Sutures, and they are of three Sorts; the Incarnative, the Restraining, and the third Conserver, the first is that which is in most use amongst us, and is by making so many stitches at a distance.

The Second is the Glovers stitch, and much in use among the *Spaniards*, they stitch almost all wounds by it; in the Forehead and Face I have seen them bring the wound very close, and the third day they commonly cut the knot off, and draw the Thread out, then with dry stitches keep them so brought together, and so in two or three dayes more the wound is cured.

The Third Stitch is in great wounds to hold them forceably together; it is performed as in Hair-lips.

There are Four sorts of Stitches, mentioned by the Ancients, for the wounds of the Belly, whereof I shall take notice only of one, which I have made use of my self, in the stitching of those wounds; the manner whereof is thus,

You are to take up the *Peritoneum* on one side, and leave it on the other, and then take it up on the other side, and leave it on this; This is thus made, that the *Peritoneum* which is a dry Body may be united with the Musculous flesh, otherwise only the fleshy parts would unite, and the *Peritoneum* not, through which a *Hernia* succeeds, whereby you put the Patient to the wearing a Truss  
the

the rest of his Life, and to other trouble. The Thread, you ought to use for this purpose, is to be a white, strong and round Thread, proportionable to the Needle, and both according to the wound.

You will remember to cleanse the wound of its clotted blood, if you can; but however go on with your work, that blood will find its passage out.

In great fluxes of blood the Glovers stitch is best, be sure in your stitching, you bring the Artery and Vein to his wounded fellow, so shall you the likelier secure your self, and make the work more shape-like.

In the Incarnative you are to consider the wound. If the wound be but the length of a fingers breadth or a little more, 'tis not worth the stitching, your Medicaments and Bandage will keep the lips of the wound together, and quickly heal.

If the wound be of two fingers breadth, make one stitch in the middle, if three fingers breadth two stitches, if four fingers breadth three stitches, and so go on making a stitch less than the wound is in number of the fingers, *ut semper numerus digitorum uno superet numerum punctorum*, so as the number of the fingers breadth always exceed by one the number of the Stitches; sometimes in declining parts we make our stitches at a little more distance.

The time of taking out these Stitches is, when parts are agglutinated, which is sooner or later according to the habit of Body or season of the year; commonly in great Transvers wounds eight days is required, in less wounds not so deep three or four days, in the Face the next dressing, lest the Stitches make so many Scars. But in this work you must

The distance of Stitches.

Time of taking out these Stitches.

Caution.

Dry  
Stitches.

must use your Judgment, for sometimes the wound seems to be agglutinated, while the Lips are held together by Suture, which after the Stitches are cut out is not so exactly Cicatrized, but that you might have done better to have left the Stitches a day longer; but thereto the dry Stitches will help you, which is the next way of keeping these wounds together; they are made with little bits of strong linnen Cloath, Triangular or Quadrangular, or of such figure as may serve your purpose; these are most in use in the Face to avoid Stitching, and are of use in other parts to preserve the Stitches; These are commonly spread with *Sang. dracon. Thuris, Aloes, farina triticea, Gum-Tragacanth, a part. æq.* mixt with the white of an Egg, *Gypsum* will do as much being so mixt; they are to be applyed at such distance as they may be most strong to perform what they are designed for, they will dry presently if you apply any thing to warm them, then draw the lips together as you do in Sutures.

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CHAP.

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## CHAP. III.

## Of the Fourth and Fifth Intention, and of Compound Wounds, &amp;c.

**T**HE Fourth Intention is in the Preserving the Natural Temperament of the Part, so that thereby Agglutination may be obtained, and is divided into Universal and particular Regiment. Fourth Intention.

THE Fourth Intention is in the preserving the natural Temperament, that thereby Agglutination may be obtained, which Agglutination indeed as I have already hinted, is the work of Nature alone, by whose only power all parts wounded, disjoyned and broken are Knit and made one again; but in regard there is a certain Medium which Answers in proportion to a Glew, required in this work, Nature taketh what is next hand, even the nourishment of the Part which is hurt to make it of; *ubi morbus Ibi Remedium* is here as an Oracle, where the disease is there is the Remedy; no sooner is the wound made but the Balsame is discovered. Blood (at left the serous part of it) Fourth Intention preserving natural Temperament.

1 per Sym-  
physin.

2 per Sys-  
sarcofin.

is the Glew, which she useth both in curing by the First and Second Intention; the first being performed *per Symphysin*, i.e. a re-union of the part without any *Medium*, by which word I here mean any Callus or flesh, or other body interposed, for in another sense the Balsam of Nature is the *Medium*, the Instrument of Unity, and Knits the parts together. The Second *per Sysarcofin*, i.e. with a *Medium* or Interposition of some flesh or Callous substance, that fills up the space between the Lips of the wound; great care must therefore be taken that the Blood offend neither in quantity or quality, too much bringeth on *carne luxuriantem ac supercrescentem*, proud and loose flesh; too little doth defraud the part and affordeth not a competency of matter for the work.

Regiment,  
1 Universal.

Considera-  
tion from  
their man-  
ner of  
living.

If the quality of the Bloud be ill, it cannot produce good flesh, *qualis sanguis talis caro*, as the bloud is such is the flesh: the means whereby this Intention is performed is a regiment of the Patient, and that is either Universal as to his diet, or particular as to the peculiar management of the part it self. As to the Universal we are to consider; first, *an victus plenus vulneratis an tenuis*, whether a full, or slender diet? This hath been a dispute in former Ages, but I think no man of common sense but knows, that as a full diet is hurtful for those of a full body, and in wounds where there is great Inflammation and like Symptomes; so when a Body hath been exhausted through loss of bloud or the like, it is reason that a greater liberty should be allowed, as Broaths, Cullices, Cordials, &c. Withal I conceive there should be consideration had of their manner of Living; some people have so accustomed

accustomed themselves to drinking of strong drink, that without such a proportion they cannot live, I could instance it by many stories if it were necessary; but one for all, and from abroad, *Ed. Br.* an old servant to a Person of Honour, was bit by a Monkey in the back of his hand: to prevent Inflammation I forbid him Wine; he next morning complained he had not slept that night, that he was faint and sick, and that his wound was the least of his ailment; that day he continued faint and ill, and the next morning complained again of his want of rest, and that afternoon he swooned, and complained he could not live without Wine, he had good Broaths, Caudles and such like, and I believe he did drink some Wine (but he was allowed by his Master a Bottle of a quart every morning for his draught, and was seldom sober) his wound was Crude, and Inflamed; I complied with his desire; he drank again as he pleased, his sickness went off, his wound digested and he cured. This I have seen often in some of our *Dunkirkers* at Sea, who drank extraordinarily, and were full of drink in our Sea-fights, I could scarce ever cure them without allowing them Wine, and thereby their Spirits were kept up, and I had the liberty to bleed them as I thought fit.

*E. B. cured  
by allow-  
ing Wine.*

It hath been a common saying, *a hair of the same Dog*, and that Brandy-wine is the common relief to such; what then must become of such a one after a hard drinking for many months together, if he chance in heat of drink to be wounded, and from that time his Chirurgion condemn him to *Ptisan* for a week together, nay two daies? will he not Faint and languish, his wounds become In-

digested and Inflamed? you may laugh at my pleading for them, but I hope you will consider I am a water-drinker the while.

In other things such diet is to be observed as their strength will permit, we do not use to purge in wounds with Cathartics lest by stirring matter it flow to the weak part, but allow Lenitives, as *Cassia*, *Tamarinds*, *Manna*, *Sena*, *Rhubarb.* with *Sal. Prunel.* also *Electuaries* as *Lenitiv. diaprun. syr. Ros. sol. de cichor. cum Rhubarbaro*, also Broaths wherein hath been boyled Lettuce, Succory, Endive, Sorrel, Purslane, Borage, Bugloss, &c. and bleed according to the strength of Body, and as Symptomes Indicate in a direct line of the same side.

Of Vulnerary drinks  
powders  
and Electuaries.

Another part of the Regiment of wounded persons will consist in giving of Vulnerary drinks, of which we find many mentioned by Authors, and the *Materia Medica* very large, witness that great tribe of Vulneraries in *Perkinson's Herbal*.

The most common Simples with us in *England* are, Comfrey, Bugle, Ladies Mantle, Agrimony, Sanicle, Pauls betony, Fluellin, Periwinkle, Mugwort, Plantain, Horse-tail, Adders-tongue, Avens, Cinkefoil, Wild Tansie, Vervain, Ground-Ivy, Golden-rod, Herb trinity, Centaury, St. Johnswort, Snakeweed, Knot-grass, Mousseare, Yarrow, Scordium, Strawberry leaves and roots, Tormentill, Bistort, Valerian, Red roses, &c.

Some of these are made choice of to be boiled in water with white Wine and Honey, of which sort you have a sufficient example in the *decoctum Traumaticum* of the Dispensatory.

Their principal use is in wounds of the *Thorax* and



and *Abdomen*, though they be of frequent use in all great wounds. Sometimes also if the disease run out to a length we add *Guajacum*, *Sarsa*, and Scorbutical Medicines.

There are likewise Powders made of Crabbs-eyes, Coral, Nutmegg, &c. and Electuaries of the roots and hearbs beaten up with those Powders.

The particular Regiment is in preserving the natural heat and tone of parts, without which we can hope for no union. For the better understanding hereof I must put you in mind that there is not any part of our Body admits of a solution of continuity without pain; every scratch in the skin and little cut in the finger is painful, much more wounds in the flesh; This pain stirs up a heat which ferments in the Serous part of the Bloud, which readily makes way to the wound, and if not timely prevented distends and raises the part into a Tumor and Inflames. If this happens in a full Body, or one of an ill habit, where the bloud is Serous and more apt to ferment, the mischief is greater; and if the wound be in a declining part, as the legs, the Influx of humours are more abounding, and the member through its weakness not able to assimilate, nor yet expell; whence crudities heap upon the lower parts and makes an œdematous Tumour there.

Second Particular.

To make this more plain, I shall give you one Instance of the many that happen daily; A young Gentleman of about 18 years of age, of a good habit of Body, one day sporting in the Country with his Gun and dogs, was prickt with a Thorn on the outside of the Calf of his leg, he takes

A Person prickt with a Thorn in his leg.

Medica-  
ments pro-  
per in the  
beginning  
of a Phleg-  
mon.

little notice of it, returning in the evening to his home, he drest his leg with a little Balsam, the next morning it was more painful, Inflames and Terminates in a *Phlegmon*; I am sent for after a few days, and find the Tumour large with great Inflammation, and suppurated; In the lower part, about the foot an œdematous Tumour: I opened the Tumour, and discharged a quantity of Matter, and cured the Patient as is usual in *Phlegmons*. If this Person had been treated according to the universal Regiment by bleeding and Lenient purgatives, &c. Nay if only after this particular Regiment in the preserving the Temperament of the part, which ought in this case to have been by refrigerants and astringents to have prevented the Influx of humours, and applied some maturative to the festered Scratch or prick, as *ung. Basilic.* upon a Pledgit of Lint to give a Breathing to the part; this with any of our restrictive Emplasters a compress dipt in Oxycrate with convenient Bandage over all, had preserved the tone of the part, and cured the Patient without further trouble.

To proceed rationally, by this Intention in wounds, you are to apply to the Lips of the wound such Medicaments as have an Agglutinative facultie, as *Bolus Armen. Sang. Dracon. Thus, Aloes, Gum. Elemi. Colophon. Terebinth.* And outwardly, to prevent influx of humours, such as are Cooling, Drying and Corroborative, as *fol. plantag. Equiset. Millefolii. vinæ per vinæ, ulmi. flor. Ros. rub. Balanst. nucum cupressi. Gallar. Baccar. Myrtillor. far Hordei. fabar. vinum rubr. posca. Aqua font. & oleum.* These are the Simple Medicaments, which are to be proportioned to the habit

habit of Body and wound, as it is greater or less, *Parva & superficialia vulnera natura sua sponte nullius Medicamenti indiga sanare solet: Labia solum à nobis contrahantur & Ligamento circumduntur, ne pilus aut arena aut tale quid illabatur, & ulcus penitus coalescet, Etiam de curatione vulnerum.* In small and superficial wounds, as those which are made according to the length of the member, there Nature of her own accord is wont to effect the cure, without the help of any Medicament; from us only is required that the Lips of the wound be brought close together by bandage, that neither hair, nor dust, nor any other thing fall between them. But in greater wounds that will not so easily be cured by Suture, we keep the Lips together, sprinkling them with this, or some such like Powder, *R̄ Bol. Armen. Thuris. Sang. Dracon. part. aquales*, and spreading a cloath with some of the same Powder, apply it with a Compress dipt in Oxycrate, and a sutable Bandage over all; This is generally the way. But lest by the adhesion of this Emplastick Medicament, the Lips of the wound should be torn and disturb'd in taking it off; I chuse rather to apply over the sprinkled Powder, a pledgit of Lint spread with *Liniment. Arcei*, or this following *Unguent. R̄ Terebinth. Venet. ʒiij. Gum. Elemi. ʒij. Sang. Dracon. Thuris. Mastich. an. ʒj. M. f. Unguent. s. a.* or this, *R̄ Terebinth. ʒij. Resin. Pin. Oliban. Colophon. an. ʒijss. Mastich. ʒj. Croci ʒj. Cera. ʒij. Olei. Hyperic. q. s. ut ft. Unguent. Unguentum Aureum* in the London Dispensatory is also good in this case; as likewise are the compound Emplasters, *Diapalma, Diachalcit. de Lithargyr. de Bolo. de Betonica*; or you may use this following *R̄ Terebinth. ʒij.*

The Authors way.

*Resin. Pini* ℥iij. *Gum. Elemi* ℥iij. *Aristoloch. Long.*  
 ℥j. *Sang. Dracon.* ℥iss. *pulver. omn. subtilissime,*  
 & f. *Empla. s.a. igne lentissimo.*

In all Wounds where I propose to Cure by Agglutination, and would preserve my Stitches; I forbear the use of Fomentations and slabby Medicaments: nor will you have occasion for such applications, if you proceed rationally as you ought to do; I always accounting these simple Wounds cured, when the Lips are well brought together, and dressed as above-said. Indeed in large and deep Wounds, where the Muscles and Tendons are cut through, there the Wound may require to have a space left open in a declining corner for discharge of Matter, lest it be healed outwardly, and some Matter shut in, whereby it becomes an hollow Ulcer. In this case you may use Fomentations and Embrocations. This is to be left to the judgment of the Chirurgeon, who is not to doubt but that Nature will do much towards the Agglutination of the wound; if influx of humors be kept off by his Art. But if the wound be so great and deep that you cannot bring the Lips close together, then in a declining part you may put in a Tent with a Digestive *è Terebinth. & vitel. ovi*, Turpentine being one of the most proper Medicaments in all Wounds, especially those of the Nervous parts; for it preserves Bruises from corrupting and putrifying, strengthens the part, eases pain; and this it doth by its Digestive Faculty, and is thus commonly used. If you apprehend its acrimony, you may rake that off by washing it in Plantain, or other water: where we fear Inflammation we add *farin. bordei*. Or you may use this Balsam of the Spanish Priests,

Priests, known by the name of *Oleum Aparici*, *Ol. Apari-*  
 which is thus made, *Rx Ol. olivar. unc. iij. Te-*  
*rebinth. venet. unc. viij. frumenti Integri, unc. j.*  
*sem. Hyperici, unc. ij. rad. Cardui Benedict, rad.*  
*Valeriane, an. unc. j. Thuris pulveriz. unc. ij.* the  
 Seeds and Roots are to be shread and beaten, put  
 them into a pot, cover them over with White-  
 wine, let them stand two days infusing, then add to  
 them the Oyle and Wheat bruised, boil them to the  
 consumption of the Wine, then strain it out hard,  
 and add to it the *Terebinth* and *Thus*, then give it  
 a walm or two, and keep it for your use as a very  
 good Balsam, often used by me. This is to be dropt  
 warm into large Wounds, and prest out again, and  
 the wound brought as close together as you can,  
 with a Compress dipt in Red-wine, wherein hath  
 been infused *flor. ros. rubr. Balauft*, and such like,  
 over this Compress make your Bandage; these  
 Wounds are to be drest but every third day.

*Galen*, speaking of Ulcers, says, *In Ulcers, al-*  
*though Matter flowed much, he Drest them but every*  
*third day, and in Winter every fourth day*, yet there  
 may be occasion of opening sooner, for the straight-  
 ning the Bandage, or putting on dry Stitches, or cut-  
 ting out the true Stitches, lest upon any accident the  
 Suture should relax and the Wound open again.

Thus far I have proceeded in Simple wounds, to  
 the Agglutination of parts, we shall now consider, Com-  
pound  
Wounds.  
 of Wounds, wherein there is loss of substance by  
 Abcision, or through a redoubling of the blow  
 cutting twice or thrice in one place, or where  
 through the distance, or hardness of the Lips of the  
 Wound, it could not be kept together, but that a  
 Cavity hath remained in the bottom; and herein  
 we

Vitriol and  
Allom.  
stones.

Contus'd  
Wound.

we are to regard the habit of body, that there happen no defluxion or inflammation upon the part. This is done by universal Regiment and Digestion, with Mundification, that a new flesh may be made to fill the Cavity, to which purpose this or such like may be used, *Rx Terebinth. unc. iij. farina Hordei drach. sex. Thuris Drach. j. s. Vitell. ovi j.* to these you may add after a day or two, *Mel. ros. aut Mel. com. q. s.* and if yet there be required more deterfion, or flesh grow lax, you may use *Mer. precipitat.* at your plealure: In these cases I have long pieces of *Vitriolum, Roman. & alumen.* fitted to Quills, whereby I dry this supercrescency with less disturbance to the Patient. To this purpose you may use this *Mundificativum Apii, Rx Fol. Plantag. & Apii an. M. j. Ros. rubr. P. ij. Vini rubr. unc. viij. decoquant. ad medias in Colat. dissolv. sach. rubr. unc. ij. Terebinth. unc. j. Farin. Lupinor. & orobi an. drach. j. Aloes, Myrrhe an. drach. s. decoq. rursus & addendo Cera q. s. reducant. ad formam ung.* This is *Quercetan's*. In the use of detergents you must consider the habit of Body, and accordingly add or diminish, making them of a good consistence, and having so disposed the Wound to Incarnation, if what be prescribed do not Incarn, add *Pnl. Ireos, Colophonia, Mastich, Sang. dracon. Sarcocoll.* to make a Sarcotick Ung. and afterwards cicatrize with Ung. *Tutia Vigon.* or *desiccativum,* &c. or with Pledgits dipt in an *Aq. Calcis,* or *Aq. Alumin. simpl. factâ solutione in Aq. Rubi,* and dried again. If a Contusion be joynd with a Wound, then you are in the first place to endeavour, that the Contused flesh in the Wound may be suppurated and turn'd into Matter, and that *cum vitello ovi & Terebinth. & ol. Ros. or Ung. Basilici* malaxt in  
ol.

*ol. lilior.* warm the parts about to be Embrocated with *lenients Ol. Lilior. Chameli, Lumbricor.* and that the more circumjacent parts about be Embrocated with *Albumine Ovor. Ol. Ros. Ol. Myrtil.* and a little *Acet.* and some of our restrictive Powders, as *Bol. Armen. Sang. Dracon. Flor. Ros. Rub. Balauft,* mixt with the above-said to the consistence of a *Mel.* or *Emplast. à Bolo* applied over all, to prevent the Influx of serous Blood into the pained part, and a Compress dipt in *Posca,* with good Bandage to be made over all, to press out the humors already fallen into the part affected, as also to prevent the access of more, which would be apt to flow thither by reason of the pain; to which purpose you are to let the Patient Blood, and proceed as is said in preserving the temperament of the part: If that pain increase, you are to have recourse to Anodynes, as is proposed in the Fifth Intention; but if there be little pain, and the flux of humors restrained in some measure; then you are to apply Discutients to the parts about: The Wound digested, proceed as abovesaid with Detergents, Sarcotics, and Epulotics.

These great Tranverse Wounds are not so often  
 seen here in times of Peace, but in the Wars are Tranverse Wounds.  
 frequent, especially when the Horse-men fall in among the Infantry; the Enemy cruelly hacking them, the poor Souldier the while sheltering his head with his Arms, sometimes the one, then the other, until they be both most cruelly mangled, and yet the head fareth little the better for their defence; many of them not escaping with less than two or three Wounds, through the Skull to the Membrains, and often into the Brain, and if he fly and  
 the

the Enemy pursue, his hinder parts meet with great Transverse wounds, over the Thighs, Back, Shoulders and Neck. Mr. *Sanderson*, now one of the Chirurgeons of *St. Bartholomews Hospital*, was once a fellow-labourer with me in the Dressing such: At *Sterling* Mr. *Chace* the Kings Apothecary assisted me in the Dressing many such, and one with such a Gash thwart the nape of the Neck, as it was our wonder that he lived: All these wounds inflicted behind were full of Maggots, they having been some days Undrest: These Wounds I stuped with a decoct. *Absinth. Centaur. Scord. Lupinor. Myrrha, Aloes*, and softened the stubborn lips with fomentations of *Rad. Althæ. Consolid. Maj. Sumit. Malvar. Violar. Hyosciam.* boil'd in Broath, or with decoct *Hordei*, or with Milk, or warm-water, we refresh'd and disposed them to yield to Suture, or Bandage; we digested them with *Terebinth. & Vitell. ovi*, with Dossils, Pledgits, or small Tents dipt in a warm *Ol. Hyperici*, keeping some declining part open. 'Tis proper to pour Oyle or Balsam into these Wounds, but then it must run down, or be prest out of them again: the parts about we likewise Embrocated and applied over all *Empl. de Lithargyro*, with Compress and Bandage: digestion once made, we then deterg'd with *Mund. Paracels.* and cicatrized, as hath been said elsewhere. Thus I cured all these wounded people, or so disposed them, as with leave they retired to their own home to be cured with more convenience.

*Si vero vulnus profundius fuerit, & in superficie, Angustius, scalpello incidatur ut equalis amplitudo fiat; Etius*, lest Matter corrupt and putrifie in the bottom, or if it happen that a wound is made  
fo



so deep, and amongst the Vessels, or that the Union is hindered by extravasated blood, lying in the bottom of the wound corrupting and disturbing the Union of the part; and that the Matter cannot well discharge this way, you are then to consider, whether you may not pass the Matter by a Perforation *In fundo*, which if you may (as I have often done) then do it either by Knife, or a Caustick, or both: First a Caustick, then a Knife, or by a Seton-needle with a twisted Silk or Thread, or upon keeping this open a few days by a Tent or hollow Canula, you shall easily heal the upper part by leaving out that Tent only; it healing up, as it were, of it self, or by the help of Bandage, to compress the parts; and after a few days more, this lower opening will cure by common Applications, your very Roulers with a Compress dipt in Red-wine, or the like will effect it.

Sometimes wounds are made deep, as in the side glancing to the Spine, and run between the Muscous flesh five or six Inches; and in some of these, before the Rapier is half out of the Wound, a second thrust is made, by which there is a double Wound, and an attrition of the lower part wounded: the Chirurgeon is to consider well the wound and part wounded, and if this be so made, and is not likely to be cured, by the first Intention, (as it is not if it be by Attrition *in fundo*) or that a tendinous body be wounded, then consider whether it may not presently have a way made out below; if it may, and that part kept open by digestion with a small Tent, then the upper part will Unite by Agglutination; but if it may not be opened, then he is to digest this upper Orifice, and keep it open;

A Wound  
double in  
the bottom  
with At-  
trition.

open; and if it be not large enough, he ought presently by Cutting, to enlarge it, while the wound is warm, and dress with your digestive warm, and let him Embrocate the part, the whole length as it is affected, with *Ol. Ros. cum Aceto*, and apply a good restrictive Emplaster over all, to hinder influx of humors; to dispose parts to quiet, then bleed, and what else is necessary for conserving the tone of the part. If after all these endeavours the wound do digest, yet will not Cure, however he ought not presently to open his wound a-thwart the Muscles, nor yet according to the Fibres of them, to such a length, not though it may be done without laming the Patient; but shall in such a wound, at the first while it is recent, make search with a Probe to the bottom of it, and with his finger without, feel what thickness the skin is from it, and keep this place as a mark in time of need, for to make the Apertion in; and if he do after digestion apply his Caustick there, the Matter will thereby discharge, and the Patient be happily cured; whereas the cutting open such a Wound the whole length hazards his Patients life, and makes a long work for himself.

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**T**HE Fifth Intention is in preventing of Evil Accidents, and correcting such as are already fallen upon the part; and these are, Hemorrhagia, Pain, Fever, Intemperies, Convulsions, Syncope, Delirium and Palsie.

Of Hemorrhage,  
or Bleeding.

We shall begin with Hemorrhagia, as being incident to all Wounds more or less, and sometimes the

the cause of all the other Accidents: wherefore I have treated purposely of the Wounds of Veins and Arteries in a Chapter by it self, so propose here only to speak of it as the stopping of it is made by some Authors the second Intention. The way to stop the flux of Bloud, as it is common in wounds, is by retaining the Lips of the wound together by Suture or Bandage, and by applying such Medicaments to them as have a drying and Agglutinative faculty; as *Galen's Powder*, *Aloes p. j. Thuris p. ij.* with Hares Furre cut, some of these mixt with a white of an Egg, and applied upon a Pledgit on the Lips of the wound, and over that some little Bole and *Sang. Draconis*, with a little *Resina* added to the former mixture, and spread upon a double cloath, and laid over the wound and parts about with Compress and Bandage, and the member placed in such a position as is for the ease of the Patient. This is our first and common way of Dressing wounds, to stop the bleeding and prevent Inflammation, and is not taken off until the third day, by which time the bleeding is stoppt, and the wound near Agglutinated; but if the wound be great and deep, so as you cannot bring the Lips of the wound together, then apply those Powders of *Galen's* upon Dossils upon the bleeding Vessels, and your astringent next, and a Compress wet in Oxicrate, with good Bandage over all, and by the next dressing you may hope that bleeding is stoppt by incarnation, if by your Probing you cause not a new flux of Bloud.

You ought to be speedy in the mitigating pain, Of Pain, for that nothing dispiriteth your Patient more, nor makes more disturbance in Wounds, the humors

mors flowing abundantly to the pained part offending in quality or quantity, according as the habit of Body is affected, whence vehement pain ensues, with great Inflammation and Tumor, wherefore you must hasten to succour it; and in the first place *Phlebotomia* is proposed as the best Anodyne, for that it takes away the cause of pain. *Unguent. Nutritum, Refrigerans Galeni, Ung. Alb. Camphurat. populeon.* Cataplasmes of *Far. Hordei, Fabar. Flor. Ros. Rubr. Sambuci pul.* decocted in Red-wine; Oxycrate or Oxymel, or *Fol. Hyosciami m. ij.* boil'd in milk and with white-bread crums, a new-laid-Egg, and a little Saffron, and *Ol. Ros.* applied as a Cataplasme; Fomentations of the Roots of *Althaa Fol. Malvar. Viol. Flor. Chamel. Meliloti* boil'd in Broath of a Sheeps-head and feet. If after this it tend to suppuration, then you may proceed that way as in a *Phlegmon*, but if it yield to none of these, then you may truly conjecture some Nerve is offended, and proceed as is said in the Wounds of the Nerves. But if pain be caused by Matter that wants a passage out, give it one by Knife or Caustick.

If some hot distemper from Choler offend the part, which may be perceived by the pain and vefication, then those Unguents *Nutritum, Alb. Camphorat. Refrigerans Galeni, Populeon.* are proper, or this following, *Rx Succ. Plantag. Solani, Semperivi an. ℥j. Boli Armen. ℥ss. Litharg. loti aq. Plantag. & Tutia preparata an. ℥j. Ol. Ros. Ompnac. & Nymph. an. ℥ij. Aceti Rosacei & Cera Tanrillum. Ft. Unguentum.*

If the distemper be œdematous, as will appear by the laxness, then Fomentations wherein *Flor. Cham. Aneth. Meliloti Sem. Fennug. &c.* such like  
boil'd

boil'd in Wine with good Bandage will serve your purpose.

Fever accompanies great Wounds, especially Of Fever. where there is Inflammation, it is almost inseparable : therefore you are the less to trouble your self thereat : but if in small Wounds it happen or continues after the pain and Inflammation is removed, and hath *Delirium* or *Syncope* with it, then there is great cause to doubt the welfare of your Patient : You are to order in all these distempers a slender and cooling diet, and humecting, and with lenients gently to loosen the Body, and by bleeding and repeating as you see cause, Apozems, Juleps, Emulsions, Epithemes, which by refrigerating and temperating the heat, are here proper.

For *Gangrena*, Convulsions and Palsies ; I refer you to their proper places, as more accompanying Gunshot than these Wounds.

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D

CHAP.

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## CHAP. IV.

*Wounds of Veins and Arteries.*

Signes of  
the Artery  
wounded.

Of the  
Vein  
wounded.

Prognos-  
tick of  
Vein and  
cure.

Prognos-  
tick of  
Artery.

And cure.

THE next thing that offers it self to our consideration, is the Wounds of particular parts, and first of the Veins and Arteries, which are subject to great effusion of blood, whereon the life of your Patient depends. *Est enim sanguis Thesaurus vita*: and therefore requires your speedy help. You may distinguish whether the blood be from an Artery or a Vein, by the flowing of it, and by its colour. From the Artery the blood rushes impetuously & *per saltum*, by reason of the dilatation and constriction of the heart, and is of a florid colour. The Venal blood flows with a more smooth and even stream, of a gross consistence, and of a darkish colour. Of these Wounds there is no great danger, *Galen's* Powder with the white of Egg, with the Suture and the formerly proposed way of dressing and Bandage, will certainly stay the bleeding of Wounds in the greater Veins, and cure the Wound at the same time, or in few days: But those of the Arteries are most difficultly stopt, for that the blood is in a most vigorous and strong motion.

If these wounds be not with loss of substance, and

and lips bruised, you are then by Suture to bring the Suture. Lips & Artery both together, passing your Needle, with a good strong thred seared through both Artery and Lips, making *Guido's* suture, which he calls *suppressor* or Glovers-stitch. And having thus secured the Vessels for the present, you are then to apply such as this over all. *R. Boli Armen. ʒiij.* Applica-

*Sang. Drac. Thuris, Aloes, Glutinis sic. an. ʒj. Gyp-* tives.

*si, Farin. Volatilis an. ʒss. Hipocystidis, Acatie Sumach. an. ʒiij.* with the white of Eggs make it to the consistence of Honey, apply this upon a double cloath over the wound and parts about, with a compress squeezed out of Oxicrate or *Acetum*, and roul up the Member, with the Agglutinative Rouler, beginning on the opposite part, bringing Roulers.

both the heads over the wound, and having taken a turn or two there, roul upwards and downwards, so as to press the bloud from below upward, and to hinder the Influx from above. Your Bandage must so be made, as may be to the ease of the Patient, and the position such as may prevent as much as may be all pain, keeping him cool and quiet, and to a slender diet, and his drink cooling and Incrassating, as Fountain water, with *Sal Prunella*, or *Acetum*, or with Gads of Steel quencht in it, sweetned with Syr. of Coral, or Pomegranates, or some of these of *Quercitan's*, *R. Croci Martis, Essentia Corallor. an. ʒj. Syr. de Ros. Sic. & Mirrill. an. ʒj. aq. Papaver. Rhead. ʒiiij. m.* or a Decoct, *Hordei cum Sem. Papaver. Alb. & Hiosciami*, with Rose-water and a little Sugar, as a draught at night, or at present in any great extremity in bleeding; also a grain or two of *Laudanum*, if the Patient bears it well, in these cases is commendable. You are to let bloud from the contrary part as the Bleeding, where.

strength of the Patient will permit; only a little at a time for revulsion, as also Cupping, Friction, Binding the remote parts, & the like for derivation.

Qu. if the  
Stitches  
break.

Deligation  
and Ab-  
cission.

Escaroticks, &c.

Cautery.

In such great effusions dress not the Patient again in five or six days; then if all be well, dress him again after the same manner; but if you find the blood hath made its passage through all, and the Stitches broken, then if you can come to the Arterie, you shall do well to take hold of it by a little hook, and separate the Vessel from its teguments, and with a twisted thread make a deligation upon the upper and lower-most part of the Arterie, and divide it in the middle, so the ends will contract; and as the Arterie Incarns, the Ligature will cast off: Then proceed by digestion and *Sarcoticks*, and cicatrize the wound. But if the Arterie lies so deep that you cannot possibly come to make deligation upon it, proceed by *Escaroticks* applied to the Vessel, or by an actual Cautery. If by *Escaroticks*, then you are to cleanse the wound of the clotted blood, and dip it in some such like Powder, *R<sup>e</sup> Thur. Pul. ʒij. Aloes, Glutinis Sic. an. ʒj. Chalcant. Vst. ʒijls. Arsenici ʒvj. Gypsi ʒijls.* apply this upon the Arterie thick, and fill up the rest of the wound with *Galen's Powder*, with Hares Furre cut into it, and over all your digestive è *Terebinth. & ovo integro*, and dress up the wound as before; and at your next dressing, leave the *Escarotick* sticking, and Incarn as fast as you can, or instead of them, Vitriol powdred and tied in a fine rag, and thrust to the bottom of the wound, and dressings applied over as before.

But if after these former dressings that Arterie bleed, and you cannot come to divide the Arterie, then you must use the actual Cautery. By it



it the Vessel shrinks up at both ends, the flux is immediately stop'd, and the part marvellously strengthened. You are to convey it down by a *Cannula*, and that it may not heat, cover it over with an Emplaster, and wet the outside with the white of an Egg, or mucilage of Quince-seeds. But before you use your Cautery, you should remove the grumeous blood, or whatsoever else lies in your way, lest it cool your Cautery, and frustrate your endeavours, and pain your Patient to no purpose: Once or twice pressing with your actual Cautery to divide and contract the Artery will be sufficient. Oftner may burn it to a coal, which may cause the falling off of the *Eschar* before it is Incarned, and a new flux of blood follow; that done, dress the part with a little of the mucilage of Quince, mixt with the white of an Egg, and Embrocate them about with *Ol. Rosar.* and apply your Emplaster *Diacalcith.* malaxt with some of the same Oile over all; and after you have allay'd the heat of the part, then digest the Wound, and with *Sarcoticks* Incarn, and by *Epuloticks* cicatrize the Wound.

Cautim.

A person of a good habit of body, about 35. years of Age, wounded in a Duel on the right side the *Aspera Arteria*; being run through his neck below the last *Vertebra* of that side behind: The Wound was small, yet he bled with a full stream, but it stop'd by holding a finger upon it while I made dressings ready, which was with a few of our common astringent Powders, with the white of an Egg, and a little *Acet.* upon a thick Pledgit of Lint, with an Emplaster after of the same, with Compress and such Bandage as it would bear: The Wound behind bled, when that before was drest. I applied

Observ. 1.  
Wound of  
the internal  
Jugular.

the said Medicaments to that, and we held them on with our hands, until they were dried on, then we put him to bed in the same house, and kept him cool and quiet. I used all my endeavours for the contemperating his blood, as is usual in such cases, and drest him but once in four or five days, unless I were necessitated by the bursting out of the blood from his wound; he bled at times about 16. or 17. days; his wound by the *Vertebra* of the neck was cured in few days: and this near the *Aspera Arteria* was cured by this way of Agglutination the nineteenth or twentieth day.

Observ. 2.  
An Artery  
wounded.

A man wounded in the Artery under the right Eye, was at that instant drest by Mr. *Fawcet* Chirurgion, the next day in the afternoon it burst out impetuously; I was sent for, and found it bleeding with a strong impulse, the wound very small, not so big as a silver penny, made by a blow with the corner of a Trencher; I drest the Wound with *Pulv. Galeni*, and applied an Emplaster over it made up with my common restrictive Powders, *cum Albumin. Ovor.* and a little *Acetum*, with good Compress and Bandage bound it up: The next day his Wound bled again, and upon stopping of that little wound with my finger, the blood was seen to beat all along the Artery under the Eye to the Temporal Muscle, with a greater force than is commonly seen in an *Aneurisma*; I then with a crooked Needle peirc'd through both the Lips and Artery, and by Deligation restrained the bleeding, and with *Emplastricks* drest it up as before, concluding I should have very little more trouble from this wound; but within two or three days after, it burst out bleeding again; then I being absent, some other

Chirurgion

Chirurgeon was call'd in, and after at another bleeding Mr. *Fawcet* drest him, and at another time Mr. *Aris* drest him, the wound was now grown large, with the crowding of Dossils, and being in a very inconvenient place for bandage, it bled often, and was drest by such Chirurgions as they could meet with in their necessity; *Escaroticks* being thus frequently applyed to stop the flux of blood, his Eye was very much inflamed, so as it was verily believed by us, that if he did recover of his wound, yet his Eye would be lost, his continual bleeding thus for many dayes had so exhausted his Spirits, that there was small hopes of his surviving.

At the last bursting out of this Vessel, Mr. *E. Molins* deceased, Mr. *Fawcet* and my self met together at his Chamber, we found him lying as dead, with his hand out of his bed upon his breast, we felt for his pulse but it did not beat, we concluded him dead, and took the dressings hastily off the wound, it did not bleed though it was open, we supposed the blood exhausted, the Artery lay in the wound torn by the *Escaroticks*, we took up the Ends and tyed them, and drest the wound with Liniment *Arcti* and an *Empl.* over it, not believing that the man would ever recover, but from this time, the bleeding of the wound ceased, and the wound by very common remedies daily Incarned to my admiration, and he was in less than a month perfectly cured, both of his wound and eye. This Patient was subject to the like bleeding upon every Scratch.

A Butcher was wounded in the Artery between the Thumb and Fore-finger, with a large wound, after he had been drest three or four days by some body, the wound continuing still to bleed, he came

Observ. 3.  
Artery  
wounded.

to me late one night from *Westminster* bleeding, with dossils crouded in the wound, I threw them out, and with a needle and a thread stich't up the wound and the Artery with it, sprinkling my agglutinative Powders upon the Suture with my *Empl.* and Bandage, as in the former wounds is said; in three or four dressings I cured him, but after there remained some pulsation extraordinary under the *Cicatrix*, which proceeded from the too lax Incarnation of the wound, wherefore with a pledgit dipt in a dulcified Tincture of Vitriol prest out, and Applied with a good Compress, and rouled over the affected part, it was dried and shriveled so as from that Application there was seen no more pulsation in the skin from the Artery.

Observ. 4.  
*Aneurisma*  
broken  
open.

One in the New Exchange had an *Aneurisma* in the palm of his hand, lying a-long to the third and fourth fingers, which at last broke out, and bled at times the space of eight or ten daies; and being at a loss he sent for me, with this Tincture of Vitriol as above-said, I cured him not only by stopping the bloud, but by making a firm *Cicatrix*, I drest these Eruptions, but seldom once in four or five days.

Observ. 5.  
Wound of  
the Surall  
Artery.

A Sedentary young Gentleman of an ill habit of Body, wounded by a puncture in the Inside of the calf of his leg into the Surall Artery, bled much, a Chirurgion is call'd for; he fills up the wound with his Dossils dipt in *albumine ovi*, and astringent pouders, wherein was *Escarotics calchantum ustum*, &c. Applying over this his Emplaster and Bandage, by which he stopt the flux of bloud, and left the Patient to rest: The next day I am call'd in

in to dress the Patient. Upon a relation of the wound and this manner of dressing, I propose not to open the wound in four or five daies, unless some Accident happen I visit him daily, he keeps his bed, complains of a disturbance in the wound, as burning, throbbing, and pain at times, not constantly, and is very Apprehensive of its bleeding; looks himself often upon the Bandage, and Alarums me by messages as often. The third morning his Chirurgion and my self meet, we find the Bandage all bloody; we propose to dress, The Apparatus being made we take off the dressings, and find the blood fresh in the Roulers, but upon taking off the Emplaster see the Dossils come out, and with such a foul bloody *sanies*, as is usual in such wounds after the filling them with such Powders. I consider with my Brother Chirurgion, whether the putting in a Tent with *Escarotics* may not stir up flux of Humours, and be attended with Inflammation, &c. and whether that way we may be sure of meeting with the Artery; and if we do whether our Medicaments will restrain its bleeding; and if not, then whether by pressing upon that Artery we may not raise a flux of blood anew? To avoid all such I resolve to dress the wound with our common digestive, with *Tereb. vitell & ovi* with *pulvere Galeni*, and so we apply it upon a thick pledgit of Lint, and Embrocate the parts about with *ol. Ros. & Aceto, & Empl. à Bolo* over all with good Compress and Bandage; by this I suppos'd the parts would be at ease, the wound at liberty to discharge the sloughs and *sanies* which was made and choaked in by the last dressings; and the Union of parts within furthered, and the blood in the Artery restrained. If it did not thus answer expectation,

pectation, yet I concluded we had done what became good Chirurgions, and that at the next dressing it would be in our power more easily to lay open the wound, and divide the Artery without hurting the nervous or tendinous bodies near it. For a wound so drest up would either unite or dilate its lips, there being a pledgit proportionable to receive a small quantity of matter, such as might be expected from such a wound, well-condition'd, but a greater quantity, or a new flux of blood that could not get out so, must necessarily distend the lips, we resolving not to dress the wound again in less than 3 or 4 daies: Thus we left the Patient easie; but the next day I found him unsatisfied how this wound could cure so drest without a Tent, and oft murmuring that it would rancle; yet he continued pretty easie, and did not bleed all these three dayes. The Fourth day at the opening, we found no blood but what was mixt with matter, and the wound lookt well; but by his importunity I complied with him, and put in a short Tent spread with digestive and dipt in præcipitate, and drest him up again; and the third day open'd, and upon the dressings there was a fresh blood again, which was followed by a thick white Matter, as from a *Phlegmon*, more than might reasonably be expected from a small puncture, not above half an Inch deep; wherefore fearing a cavous Ulcer, I resolv'd to dress without a Tent, and by good compress and bandage to press out this Matter from within, and defend the part from Influx of Humours from above: to which purpose I drest with pledgits as before with my digestive, &c. and open'd the wound once in three dayes, and altered not this method, though I chang'd the *uxg.* upon the pledgit

git as I thought fit : Thus I kept the part without tumor or Inflammation, and the matter lessened each dressing, but was not well digested nor free from blood, but his feet swell'd, and himself ~~undisposed~~ ; *Scorbutic* and such like affections, with loss of Appetite, fainting, &c. To relieve him in these Dr. *W.* was consulted, and after a while I caused a straight stocking to be laced on both legs, and got him out of Bed at least for some little while every day, and when he was able he retired into the Country, but hath not yet got off of the disease he heightned, by keeping within doors with this little wound. Doubtless this cure had been shorter, if immediately in the first dressing he had been bound up with an Agglutinative bandage, and the whole committed to nature.

A Cooper living near *Maidenhead* in the County of *Bucks*, accidentally in letting blood was prickt in an Artery, the Arm swells and is pained, he puts himself into another Barber Chirurgions hands dwelling in *Windsor*, who by unfit applications, Relaxes the part, then supposing the soft Tumor he had made was a Suppuration of Matter, ( though indeed it was the Arterial blood ) he with his Incision knife or Lancet cuts into it, at which an impetuous flux of blood rushes out, to the quantity of four flaggons, he fills up the opening with Lint, and makes a hard bandage round it, which somewhat restrains the flux of blood, but the Arm swells, and threatens a Gangreen : While this poor man lay thus afflicted, We his Majesties and Royal Highness Chirurgeons attending the Court, did visit him, and proposed to make an *apparatus* for the taking up this Artery, or in case of failing to take

Observ. 6.  
Artery  
wounded  
in a Coopers arm at  
*Windsor*.

take off his Arm by Amputation; We met the next morning, the Patient is taken out of bed and placed in a Chair towards the Light, one of his friends held him in the Chair: Mr. *Whittle* stood behind his Arm, and held his Elbow with his left hand; and with the other hand was ready to help me in the operation; Mr. *L.* holds the lame hand: In the first place I viewed the Arm, where finding no Gangreen according to the report of the Chirurgion, but rather (as I thought) an *Aneurisma*, I made a bandage above the wound, to hinder the Influx of blood into it: Upon this bandage Mr. *Pearce* made the gripe; I then untied the Ligature from about the wound, and found that also free from Mortification; I put my finger into it, and finding the skin made thin by distention from the blood, I call'd for a Knife, which while I was searching in the wound, Mr. *Whittle* took into his hand: I prayed him to cut through the length of the hallowness. It being done, I with my finger thrust out the Grumous blood and an Abscess from the lower part of the Arm. When I had cleared the parts more distant, which would have fallen in and blinded my Work, I then made way to the Artery, removing from about it the clotted blood; upon which it immediately burst out, I prayed Mr. *Whittle* to hold his finger upon it, he did so; then I separated it from the parts about it, and passed a crooked Needle under it; and being ready to tie it, I desired Mr. *Whittle* to hold off his finger, that I might be the more sure it was the Artery, upon the doing of which it spurted out: I tied it, but in tying the Thread broke: This caused a murmuring in some of the by-standers, as that the Patient would die under our hands while I was endeavouring



ing deligation, which by a new wounding of the parts would hasten Mortification and Death; I desired they would continue their places, and Mr. *Whittle* his finger upon the Artery, that it bled not; he did so; in the while I made a strong Ligature of some twisted Threads, seared it, and put it into the eye of one of our common silver searching Probes. Gentlemen, said I, you shall see me pass this Probe under the Artery, and thereby you may be assured I shall wound no parts; I immediately did so and tyed the Artery, Mr. *Whittle* took off his finger, it bled not; then Mr. *Pearce* took off his hands, I then loosened the Bandage, which was all the time before under his hands, It bled no more; I told them there was more to be done in order to the binding that Artery; but in continuation of the continual Fainting of the Patient, we would defer it to the next dressing: then calling for dressings, they brought me what was designed for Amputation, which I refused; and ordered the common digestive *à Terebinth. cum Vitell. ovi*, which they fetcht.

I cut off the ends of the Ligature, and dipt some of the pledgits spread with the Liniment in *Galen's* powder, and applyed them next the Artery, and the rest of the pledgits dipt *in ol. Ros.* warm, and lightly fill'd up the wound, then Embrocated the Arm with the same oyl, and laid a *Diacalcitheos* Emplaster over the wound and that part of the Arm, and over the hand and Arm below which was *Oedematous*, a mixture of *Diacalcith. & Paracels.* Then with bandage began at the hand and rouled up the wound, and taking a turn or two there, I rouled up to the *Axilla*. This was the *Ligatura Expulsiva*, by which I propos'd the thrusting back the Influx of humors,

humors, and to give strength to the infeebled Member; He being now again in his Bed, I placed his hand upon his breast in much ease to the great joy of the Patient. At the next dressing, only Mr. *Whittle* and the Countrey Chirurgeons were present with me, we opened the Member, found the tumor allay'd, the wound fresh and tollerably digested, we now passed another Ligature upon the Artery above the first, and in pulling the first to cut it off between the Ligatures, it broke, which was as well: We drest it up with the same digestive, only leaving out the Powders; Embrocated and applied our Emplaster, rouled up parts as before; The next time Mr. *Whittle* and I undrest the member, and found the wound in a very good condition, with assured hopes of curing it in a few weeks, the Lips of the wound being more digested and contracted, we drest it up with *Mund. Paracels.* And now being impatiently expected at *London*, with my diseased Patients, I return, leaving it to Mr. *Whittle*, who drest it for the space of 10. dayes, it healing up without any return of bloud; In his absence Mr. *L.* dresses the Patient; but whether in wiping off the knot or what else, it burst out again; Serjeant *Knight* came in, dresses it with *Calcanth. ust.* and from that time it bled no more.

The Ancient way of tying this Artery is as I have already said by tying it in two distinct places, and cutting it off between, but here the Patient often fainting interrupted us in that work, and the breaking between saved us the labour.

The cutting in pieces the Arteries hath often been performed by me in *Strumous ulcers*, where they ride over the *Carious bones*, in doing which I never see the Artery break out in bleeding after the day I cut it.

CHAP.

## CHAP. V.

## Wounds of the Nerves, Tendons and Ligaments.

**N**erves may be many ways wounded, viz. *Casim* or *Punctim*, the former way they are usually cut through, and then occasion no new consideration in Chirurgery, because they wholly cease from action and are irrecoverable; but when prickt by a sharp pointed weapon, which is call'd a *puncture*, they are much to be regarded; so also Tendons, not the small Fibres of them (which are in every wound of the fleshy parts, when they are largely cut, whence they become painful) but the main body of them, which usually make up the tail or head of a Muscle, if you would know whether these are wounded or not, consider the place wounded, viz. whether near the Joint, in the inside the Arm, or Leg, or the end of the Muscle, or if in the Tendinous parts of the hand or foot, whence immediately arise great pains and Inflammation, also a contraction and hardness in the Nerve or Tendon follows. But if the Nerve be quite divided, the pain is little, a kind of Stupor or Numbness, and the particular part is Lame.

Wounds of  
Nerves  
and Tén-  
dons.

The

Ill consequences of bleeding not always from a prick of Nerve or Tendon.

The most frequent wounds of Nerves, and most to be taken care of in Chirurgery being Punctures; I shall instance in them, and chuse the most common, *viz.* those which are made accidentally by letting blood: and here by the way you must take notice, that in letting blood, sometimes the Apertion happens to be made when the skin, by the Bandage or position of the Arm, lies equal with the Vein, yet afterwards is not so, or the Apertion is made too small in the skin; so as part of the blood is choakt, and lies there extravasated, whence a *Phlegmon* is made, or it happens in those that are well Let blood, yet through the Indisposition and ill habit of Body, the part prickt festers (as they usually say) and is a day or two after sore, and if neglected makes a *Phlegmon*: all these *Phlegmons* do Inflame and swell the part, and contract the Arm; if a Boyl in a fleshy part be painful, then much more these in the Joynts, amongst the Nerves and Tendons, and this accident hath happened to all that do use to Let blood, whether Physicians or Chirurgeons.

This was the reason that some of our old Master Chirurgeons did after Letting blood, always apply a pledgit of *Basilicon* upon the Apertion with an Emplaster over it, this breathed the part, and secured it from corrupting. But we by a contrary way, as by a little Compress dipt in water, endeavour to restrain the blood, and should be laught at if we should continue the old way of *Basilicon*.

At the time we Let people blood, they are commonly labouring under some great fermentation, or apprehend it so; no wonder if it sometimes fall upon the part where it was invired by bandage.

I have been sent for into the Countrey to a Person, that after a Letting blood, was seized with a great Inflammation the whole length of the Arm, this was an *Erysipelas*, the Apertion in the Vein might possibly be the cause, but that place was not affected at all; Dr. R. complained once of a Chirurgion, who was so unconscionable as he said, to ask five pounds for curing an Arm he had made sore by his Letting blood; but I hope no person is so ignorant or malicious, to impute these accidents to a Puncture of the Nerve and Tendon.

But when they are really prickt, their Symptoms, as you may read in all those that have writ of them, are suddain with vehement pain, faintings, convulsions, and are attended by great defluxions; they do not terminate presently in a Suppuration with good Matter, until great Endeavours have been used, these yield not to the simple anodyne Cataplasme of white bread and milk.

Signs of a  
Nerve  
prickt.

Here are other considerations; and in the first place whether they lie open, or the Apertion in the skin over them be small, or that the Nerve or Tendon lie covered under the Membrane *Adiposa*; if it be so, then you are to open the skin that the Medicaments may penetrate to the wounded Nerve or Tendon, and hereto those Medicaments are proper, which are of hot dry and subtil parts to consume that Ichorous water, which first affects the Nerve or Tendon, and will cause putrefaction: *al. Ros.* with a little bay-salt dissolved in it and drop into the part scalding hot, dressing it with a pledget spread with *Basilicon* dipt. in the same oyl, and the part Embrocated about with *al. Lumbic.*

Cure.

E

with

with an *Empl. diasulp.* over, and this *cataplasma* over that, *Rx farina Hordei, & fabar. an. ℥iiij. sem. lini & fœnugraci pul. an. ℥j. flor. ros. rub. flor. cham. Sambuci, & sumit. Absinth. an. ℥iij.* boyl this in red Wine, or the *com. lixivium*, adding *oxymellis ℥iij. ol. Ros. ℥j. M.* So roul up the part gently; if there be much pain dress it twice a day, and if the part requires Medicaments of more drying and subtile parts dress with *Balsam sulphuris Terebinthinati*, or *ol. Sabina & Terebinth. an. ℥ij. Misce* or *ol. Costinum, Ruthæ, Sabina, Aneth. scorpion. &c.* These are all proper Medicines to dress the affected part, they having the quality required to dry and consume that matter which lyes corrupting in them, if applied actually hot, the Application of the former oyl of Roses and Salt hath alway served my purpose.

Caution.

Prognosticks.

In your Application of your Medicaments, you are to consider what degree of heat and Siccity is proper for the offended Nerve or Tendon; if in your use of these Medicaments your Patient feels not the heat of them, or feels it vehemently, it is then not rightly fitted; For in the former case it doth not enough dry up that *sanies*, or in the latter it doth withal inflame the part; if the Patient feel the heat moderately, the medicine is good, but if from the use of the Medicine the part Itch and Smart, and the Apertion made by the Puncture gape as at first, then the Medicament is stronger than it should be; if the hardness go off and the contraction, and the orifice not too open, 'tis a good sign: if the Nerve be cut according to its length it is the least dangerous, but if transverse most dangerous, all these wounds are accompanied with

with gleet and great pain which stirs up fluxion; if they yield not in their cure to such Medicaments as have been proposed, then you are to divide them, to prevent convulsions, *spasms*, and Gangren, after which they cure as other wounds, but do require more care in their position to keep the member steady, if it be in such a Joint where there are Nerves and Tendons, that move contrariwise; otherwise the member will not yield to that contraction, and become more difficult in their cure, and of less use when cured.

The Ligaments require much one method with the Tendons, only your Medicaments are here to be more drying, as *Euphorbium*, *Sulphur vivum*, *calx lota Tutia*, &c. without acrimony.

Cure of ligaments wounded, the same with Tendons,

A Youth about ten years of Age, one day in the Sessions yard leaning over the spiked pails to see the Malefactors, was suddainly frighted down by the Marshals men; in his falling was caught by one of these spikes in the inside of his wrist; it passing between the bone and Tendons, he hung thereby until he was taken down, they carried him home, I was sent for, I found the Tendons stretcht out to a great length, and some of them broken; others torn, and one of the bones of the *carpus* lying loose in the wound. In the dressing this wound there was trouble how to place these Tendons; I began in taking out the loose bone, and cleansing the wound, and placing these shatter'd and overstretcht Tendons within the lips of the wound, and made my first Stitch in the middle of the wound, bringing the lips as close together as I could, then I made two stitches more, one of each side the middle

Wound in the inside of the wrist

stitch, dressing him up with my digestive è *Terebinthina*, &c. dipt in this following Balsam, R: *Terebinth.* ℥iij. *olei olivar.* ℥iij. *ol. Laurini* ℥iij. *Cinnam.* ℥iij. *Euphorbii* *Garyophil.* *Baccar.* *Juniperi* an. ℥j. *Gum hederae,* *sagapeni,* *Ammoniac.* *opoponac.* *Galbani* an. ℥jss. *Myrrhe,* *Mastich.* *Colophonias pul.* an. ℥iij. *distillentur pro usu.* Over this I applyed my *Empl.* è *Bolo*, with a compress dipt in *Oxycrate*, and so rouled up the member, and some hours after let him blood, and gave him that night a draught of *Aq. Paralyseos* with *syr. de meconio.* & *aq. cardiac.* C. iij. that night he rested ill, and in the morning was full of pain. I took off the Bandage, and bathed the affected part with a decoct. *radic. Althe,* *Malvar,* *violar. cham. verbasci hioscyami,* and applied a *Cataplasma* with *farina Hordei,* *fabar. flor. Ros. rub. Balauft,* decocted in *Oxymel*, with the addition of *ol. Lumbric.* & *rosar.* over the former dressing; the next day his pain was much mitigated, the Tendons all drawn up, and the stitches lax: I thought to have drawn the Lips close, but found them too painful to admit of it, therefore I cut the stitches out, and brought them as close as they easily would, and drest up the wound as before. After some few days, the wound being tolerably digested, I drest it with this *unguent.* dipt in the former Balsam, and applyed over the wound the *Empl. Diasulphuris Rulandia,* with bandage and compress as before, R: *Terebinth. Resina, pini, ol. Hyperici,* an. ℥iij. *sarcocolla, myrrhe, Thuris,* an. ℥iij. *Cera q. sufficit;* dissolve them, and bring it to the form of an unguent: Thus I happily deterg'd and incarn'd, and by *ung. Tutia* and my ordinary Epu- lotics cicatrized the wound, and he some while after was restored to the use of his hand.



A Coach man wounded transverse over the back-side of the wrist, deep into the Joynt, so that his hand doubled inward, was carried into the next Inn: I caused a *ferula* to be placed under his hand the better to support it, and placing the fingers crookt over the *ferula*, I searcht the wound and pul'd out many fragments of Bones, and after cleansing the wound brought the lipps together by three stiches, leaving a discharge for Matter in the ends of the wounds which were both depending, dressing those ends with a digestive *è Terebinthina cum vitel. ovi & far. Hordei* with a little *crocus*. Upon the Suture I sprinkled the powders of *myrrhe*, *Aloes*, *Thuris*, & *sang. dracon.* and applyed the unguent mentioned in the former Chapter: then taking *Bolus Armen.* with some of the former Powders, made up with *Alb. ovor. Acet. & ol. Ros.* mixed to the consistence of a *mel.* applyed it as a restrictive over the wound and parts about, and placed his hand again upon the *ferula*, with a soft folded cloath under it, bringing his fingers over the end of the *ferula*, that they might be in some capacity for future use: Thus having placed his hand I roul'd it upon a good compress dipt in Oxycrate, and afterward Let him bloud, and gave him *3vj. syr. de meconio* in a draught of Mace-Ale for his Supper, and settled him to rest, but he slept little that night. The next day I ordered him a Clyster and a slender diet; the day after I opened his hand again, and fomented the wound and parts about with an Anodyne decoction, as in the former Chapter, and drest up his wound as before, Embrocating patts well about with *ol. Lumbric*, and applyed my *Emplast. è Bolo*, over the wound and adjacent parts: it digested in

Wound on  
the inside  
of the wrist  
into the  
Joint.

the declining ends a little, but continued painful, yet much more pained in the fingers: the next days dressing I cut out the stitches, and dress'd the wound with my digestive *à Tereb.* dipt in my former mentioned Balsam, and applyed a Cataplasme warm over all the wound and hand, as in the former Chapter, and roul'd up the member again: This wound did not digest kindly, nor was it easie during the whole cure, but the Inflammation went off with the Tumor about the wounded Lips; but in the fingers and back of the hand remained an œdematous Tumor. The day following I took off the dressings, and finding the Lips which I had sticht lye open, and a white flesh within them, I dropt in some of my Balsam warm into the wound, and fill'd the crude Lips with *mer. precipit.* and laid pledgits spread with the above-mentioned unguent, with some *succ. Centaur. & Chelidonii*, with *mel Ros.* boyled it gently to a good consistence, and laid the *Cataplasma* as before over all: Thus I deterg'd and cured this wound, sprinkling the Lips with *calx lota*, which cicatrized it. After this I put on a *Catagmatick Emplaster*, and kept the maim'd hand still upon the *ferula*, and afterwards caused a Glove to be made to lace upon his hand and fingers, to take off that pituitous Tumor, which did accordingly answer my expectation. But his pain continued, and so weak, as he kept it upon the *ferula* a good while after; since the writing of this I am informed he continues in the same service, his wrist is stiff, but he drives his Coach.

A finger  
bit off by  
a Horse.

A Person of a good Age and ill habit of Body walking in the street, passing by a Coach one of the Horses snap'd off the end of his finger the Glove with

with it: I drest the stump with the common digestive dipt in a little *ol. Ros.* warm, and with *Emplast. diacalcitheos*, malaxt with a little of the same oyl, roul'd up the stump. This Patient kept not his house with this little hurt, but came to me to be drest once in a day or two, and sometimes drest himself, he not thinking it worth the observation of diet, bleeding, or the like: one day when neither of us suspected ill he came to me, the Ulcer was crude, an *Ichor* dropt from it, and the part about it was blistered, I scarified the part blistered, and dabbled the wound and about with *ol. Terebinth.* warm, and strewed *mer. precipitate* over all, and with pledgits dipt in *Basilicon* with a little *ol. Terebinth.* and with *Empl. diacalcish.* over it, roul'd it up; and that night came to his Lodging with a fomentation, and other Medicaments prepared for a mortification, but found it better disposed; so continued the dressing, and afterward Let him blood, and the next day purg'd him with an infusion of *Senn.* &c. the wound digesting well from that time, I Incarned and Cicatrized the stump. Thus sometimes great mischiefs attend little wounds, through the contempt some of our Patients have of them.

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## CHAP. VI.

*Wounds of the Face.*

A Lady was wounded down the whole length of the forehead to the Nose, and then transverse under the left *Supercilium* towards the Temporal Muscle, her Eye and Face much bruised. This hapned to her travelling in a Hackney Coach, upon the Jetting whereof she was thrown out of the hind-seat, against the forepart of the Coach.

At the first sight of the wound in her forehead, seeing the bone bare and her self so disturb'd, I doubted whether I should stitch it, or keep it open with dossils; but seeing no fissure or Inequality in that part of the bone that was bare, and considering the deformity in that place would be great, being the whole length and middle of the forehead, I resolv'd to make one stitch in the middle of the forehead to bring the lips close together; so as if any Symptome prognosticated ill, I might at pleasure by the cutting off the stitches lay it open again, but if there was no cause, then the next dressing, I propos'd by dry stitches to bring the Lips of the wound close together; the upper Eye-lid hung down upon the Eye, reaching from the Inner *Canthus* of the Eye more than half an Inch beyond the outward, it was bruised, excoriated, and much swell'd,  
not

not capable of the dry stitch, nor in that place of Bandage, it being all along under the Brow, wherefore I made four stitches at such distance as they might be able to keep the Lips close together, and the last stitch towards the Temporal Muscle, I took in the piece of skin that was divided by a wound above it, as in a double Hair-lip; and over these Sutures and Wounds I sprinkled a little of these powders, *Terra. Sigill. Sang. Dracon. Aloes & Thus*, and my Pledgits spread with *Arcens* his Oyntment, and over these my *Empl. è Bolo*, and with Compress dipt in Oxycrate, and made my Bandage over from the wound, the two heads of the Roulers meeting behind; this I did to keep the wound in the forehead from uniting too close, I still fearing some Fissure or mischief there, she complaining much of her head; I having thus drest her wounds, I caused some *Aq. Ros. Rubr. cum Alb. ovi* to be beaten together, and dropt in her Eye, and little foulded cloaths doubled and wet in the same to be laid over that part, and over the Cheek my *Empl. è Bolo*, and forbore the bleeding her that night, in consideration that *nunc fluebant catamenia*, and she bled the space of five miles coming back.

The second day after I drest her again, and finding less suspicion in the wound of her forehead, of fracture or fissure, I brought the Lips of that wound together with dry stitches, with a little of the powder forementioned, with the white of an Egg, and strengthened those futures of the *Supercilia* by the same Medicament, lest the continual motion of the Lid should relax them, and then drest it up, and brought the Bandage now from behind, with both the heads forward, passing one by another

to

to bring the Lips of the wound in the forehead close together, and drest her Eye with *Aq. Pomor. Matur.* with a few grains of *Vitrioll. Alb.* this warm to remove the suffusion upon the *Cornea*; and upon her bruised cheek I applied a Cataplasme of the roots of *Orpen* beaten in a Mortar, with the white of an Egg.

Two days after I drest her again, and finding that the dry stitches kept those Lips of the wound close together, I cut off the other stitches from out the Lips of the wound, and drest her with my *Sarcoticks* composed of some of those powders fore-mentioned, which supplied the place of *Epuloticks*, and that morning I let her blood, taking away about 10. ounces with a rotten *Serum* upon it.

The next day she was purged, this was done for the carrying off the flux of humor from her Eye and Face; thus was she Cured and disposed to go out of Town, the same day seven-night she was wounded, she was hurt upon the Munday, and the Saturday afterward she was cured.

A Servant of the *L. B.* was wounded on the right Cheek, from under the Eye over the *Os Zy-goma* down the Muscles of the Cheeks; In cleansing of the wound, I felt a piece of the same Bone which was cut off by a slanting blow, and hung only by some fleshy fibres in the wound; it was cut over the whole breadth of the Bone, I took it out, & for that the part would not well admit of Bandage, I made two stitches in the wound, bringing the Lips even and close together; I drest this Patient as the former, and the third day after drest him again, and found his wound agglutinated; I cut out the stitches, and drest him with the same agglutinatives

as before, and the second day after I opened his wound again, and found it perfectly cured.

And so I have cured all the wounds of the Face as happily ; in a Hair-Lip of the Nether-Lip, I cut a little Boy ( who lay in *London*, and lived at *Greenwich* ) of about seven or eight years of Age, and cured him in ten or twelve days, though this Lip by reason of flavering, and a childish trick he had of sucking his Lips in his sleep, was the more troublesome to me ; yet he is so well cured, as I believe 'tis scarce discernable.

Whilest I served amongst the *Dunkirkers*, where *A Dutch Snick* and *Snee* was, as it were, a fashion, I had *Hamburger* much of this kind of work, and for your diversion *mark* shall set you down one of them. *with a Cross on the Right Cheek.*

Whilest our Squadron rode at Anchor in the *Groine*, there came in some *Hollanders*, under the notion of *Hamburgers*, with three Ships new trim'd up for the King of *Spain's* service ; a Boat-swain of one of these Ships hapned in company a-shore with some of our men, after a little drink the *Hollander* began to speak of Religion, upbraiding our men for their wearing a Cross, and after a little more drink became quarrellsome ; and that *Sacramenta* he would not wear a Cross, no the Devil take him, repeating this often, one of our men beat him down and fell with him, kneeling upon his breast, holding his head down, he draws out a knife sticking in his Sash, and cuts him from the Ear down towards the Mouth, then from under the Eye from that Cheek-bone to the nether-Jaw, now said he you shall wear a Cross that the Devil do not carry you away. I was sent for from the next house as a friend to the Cause, and drest him ; I brought the

the corners of the Wound close together and even by stitches, then a stitch in each of the slits brought the Lips of the wound together, then drest him, sprinkling a little *Pul. Galeni* finely powdred, which we always had in our Pockets, over this a Pledgit with some *Emplastick Unguent*, so with a Compress spread with a mixture of the same powders, *cum Albumine ovi* over the wound, bound him up, he keeping temperate the first three days, feeding only upon Bread and Bear boiled together, with a piece of Butter and a little Sugar in it: The next morning he was let blood, and the third day after I took off the dressings, and finding the wound as it were agglutinated in the slits, I cut out the stitches, and sprinkled the wound as at first, drest him up with Pledgits and my *Empl. è Bolo*, with Compress and Bandage; and the second day after drest him again, and cut out all the stitches, and in a dressing or two more he was cured, the stitches brought close together, any thing of a drying quality without acrimony cicatrizes; these, your Suture does all it self, if the part be defended from influx of humors: The Patient was well pleased with his cure, though there remained some marks of a Cross.

Some of these kind of people wearing them with much pride in their Faces, as marks of their courage.



## CHAP. VII.

*Wounds of the Limbs.*

**O**Ne of our Mariners abroad in *Spain* fighting a-shore, was thrust into the outside of the Arm, through the *Biceps* with a Rapier : A Chirurgeon in the Town seeing him bleed much, sticht the wound with the Glovers-stitch close, and applied over all his restrictives, and rouled up the part well : After three or four days, the Patient belonging to our Ship, came a-board, and being in pain desired me to dress him, the Arm was swelled and inflamed a little, but did not bleed. I cut the stitches open, their issued out a bloody *Sanies* in some quantity, and after followed a digested Matter ; by search with my Probe I found the wound wanted little of passing through ; I Embrocated the wound, and dressed it up with a short Tent with my common digestives, to see whether it would by good Bandage and the help of *Sarcoticks* Incarn, but it would not ; whereupon I passed a *Seton*-needle through, and that way discharged the Matter, and after that Apertion was digested, I dilated it, and kept a Tent there a few days : In the while, the upper part of the wound healed up, and the wound below digested well with little

Observ. 1.  
 Puncture  
 of the arm.

little Matter. I also healed it up. This I insert, not that I approve of stitching Punctures, but this way without stitching wounds, in a good habit of body, by good applications and Bandage, does sometimes agglutinate them in a few days, when drest by Tents they are of longer and difficult cure.

Observ. 2.  
Wound in  
the Thigh.

While I was in the King's service in the time of the War in the West-country, I was fetcht to Captain *M.* who in fighting a Duell was run through the Thigh, with a broad sword; I was also fetcht at the same time to the other, I hastily drest this Officers Thigh, with Pledgits spread with my Agglutinative, and some Astringent powders mixt with the whites of Eggs, applied it over both the orifices, bringing the Lips of them close, and with Compress and Bandage rouled it up, and left him to go to bed; from whence I went to drest the other, who had many little wounds, as his fingers, hands, and head cut. At my return I visited my Patient, whom I found in his bed with little pain: the second day after I drest him again, and finding all in good temper without pain or swelling, I drest the wounds as before; well satisfied that his wounds would heal up by agglutination, there being little or no Matter, pain or swelling: If it had appeared inflamed with tumor or pain, I ought then to have kept the Orifice most distempered open; and if they had both suffered, to have kept them both open with small short Tents, drest with the common digestives, and have let him bloud, and have proceeded as in a body ill-disposed; but there was no need, there was only required a quiet position of the part which he submitted to. He

was

was happily cured in seven or eight days. This was truly performed by the Balsam of his bloud, I neither bleeding nor purging him in the time of his Cure or after.

A person wounded in the in-side of the Arm, the sword passing over the joynt, and through the out-side of the Arm, he was first drest by a Chirurgeon near the place where he was hurt; he bled much. The next day I opened the wound in the presence of Dr. T. C. one of the Kings Physicians, I found the wound Tented at both Orifices, the Arm swelled, and a little disturbed, as wounds in that place are subject to be, when the bloud is shut in by Tents, and not drest rationally by refrigerants and astringents, and good Bandage. The swelling most between the two orifices, and was from bloud choak'd in the part, which was now more straitned from the influx of humors, so not likely to yield to other than suppuration; yet we foment the wounded parts with discutients and dissolvents, and keep both the orifices open with small Tents dipt in the common digestive, and Embrocated about the wound with *Ol. Ros. & Gutt. aliquot Aceti*, and over all my *Empl. à Bolo*, rouled it up: the third dressing there appeared bloud from that orifice in the in-side of the arm, which I fill'd with Precipitate and a dossil upon it, then drest the parts up as before. This time I acquainted the Patient with my thoughts of opening the swelled part, between the two apertions; there being no likelihood the Matter there could discharge it self by either of these openings, yet it was not safe to heal them up, wherefore I proposed the opening of that tumor by a little Caustick, after a day or two D. C. was acquainted

Observ. 3.  
A Wound  
in the arm.

acquainted with it, and it was opened as was afore proposed, and a corrupt *Serum* was discharged: from that time I threw my Tents out of the wound, and healed them up in four or five days after, and as the *Escar* separated and the Ulcer digested, I cured that in few days. That the bone was bare under the tumor, may I suppose yet be felt from the Adhesion of the musculous flesh to that bone.

Observ. 4.  
Wound in  
the Leg.

A person was wounded in the out-side of the Right Leg, below the Gartering-place, the wound running upward; after six weeks dressing by the neighbouring Chirurgeons, the part being much disturbed by a flux of humors, I am call'd in; I find the wound sinuous (some two inches) undigested, and inflamed with a tumor about it upward; the small of the leg and foot Oedematous, the whole member so weakned by the influx of humors, that it was neither able to assimilate its aliment, nor yet to resist the crudities that fell upon it, so would be difficult to cure; as all such wounds are where the Patient is ill ordered, as to his diet and dressings in the beginning of the disease: I propose in order to the cure to dissipate this flux about the wound, and to digest the wound by Lenients, to mitigate inflammation, and to discurf and breath out that pituitous tumor on the foot and parts about, and with the help of good Bardage to restore the tone of the parts, and then if this sinuous Ulcer yielded not to agglutination, to lay it open: To which end I proposed a fomentation of *Summit. Absinth. Scordii. Flor. Ros. Rubr. Chamom. Sambuci, Bacc. Myrtillor. Balauſt. Nuc. Cypress.* these boiled in *Aq. Font.* adding *Vini Rubr.* ℥ij. and some *Spir. Vini*; with this I foment the parts, and

and dress the wound with *Ung. Basil. Mag.* adding Precipitate to it, and Embrocate the parts about with *Ol. Ros. cum Aceto*, over this I applied *Cerrat. Galeni*, and over the Oedematous tumor below, *Empl. Diacalcith. p. ij. Empl. Striçt. Paracels. p. j.* and over all these a good Bandage, not opening the Oedematous tumor more than once a week, and then to give a breathing to the part. The wound I continued to dress daily as I had begun, and happily freed the part from inflammation and influx of humors: But the wound would not digest as I desired, wherefore I laid it open a little more than an inch, and dress it up with dossils spread with the same medicament as before, and incarned and cicatrized it in three weeks or a month after, but not without some difficulty, and the help of a strait Stocking. This person had been long kept in his chamber by this wound, and now supposing himself well, he rides to his Country house, unknown to me, seventeen miles off, but that night his Leg swells much, the *Cicatrix* scarce confirmed breaks out again, with great excoriation and inflamed redness. Thus this Gentleman returns again to his house, and sends for me. To allay this pain and inflammation, I foment the part *cum decoct. Malvar. Violar. Plantag. Solan. & Flor. Ros. Rubr.* and laying a fine Lawn wet in a solution of *Troch. Alb. Rhasis* made in some of the same decoction. I also dress'd it with *Ung. Alb. Camph.* over this Lawn, and spread some of it upon the edges, lest the Matter should be shut in by the Lawns adhesion to the Lips, and the fretted *Cuticula* raised more up. Thus I dress twice a-day, and keep the Leg upon the bed; after some few dressings, that the heat and acrimony were allay'd,

F then

then in the place of the former Unguent, I apply *Ung. Tutia Mag. Vigon.* and dipt the Lawn in a decoction of *Fol. Plantag. Summit. Rubi, Equiseti, & Flor. Ros. Rubr.* to which I added some *Lapis Calaminaris, Tutia Com. Cervi ust. & Calx lota pul. of strear. combust.* this was set in *Balneo*, and afterwards strained out, and applied upon Pledgits over the Lawn: Thus with much difficulty I cicatrized this wound and Ulceration, which at first possibly might have been cured by the way of our ancient Masters in few days.

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## CHAP. VIII.

### *Wounds of the Breast.*

**W**OUNDS of the Breast are penetrating or not, if they do penetrate, then we are to consider the depth, whether it be only between the *Mediaſtinum* in the hollow cavity of that in the lower part of the Breast, or if it pierce into the cavities of the *Thorax*, or what the parts are that be hurt. How the Breast is circumscribed, with the symptoms of each part when hurt, you may find in the Treatise of Gun-shot.

The signs of the wounds penetration are discovered by the proportion of the searching Candle or Probe,

Probe, which enters into the Cavity; you may also when it penetrates the cavities of the *Thorax* perceive it by laying a Down-feather upon the wound, or by holding a lighted Candle near the wound, the Patient holding his breath the whilest, in this case it will move the feather or flame, if it do not blow away the one, and extinguish the other; as also the Air makes a noise in its issuing forth; sometimes it's discovered by the quantity of blood discharged by the wound or mouth, or both with difficulty of breathing.

Signs of penetrating wounds.

Wounds in the hinder part of the *Thorax* are reckoned dangerous by reason of the Nerves and Tendons, and if they penetrate that way, there is another danger from the great vessels of blood which are nearer to the weapon in this case, than in those wounds which are made forward. Yet all wounds in the Breast are dangerous, by reason of the blood that falls down to the *Diaphragma* and corrupts.

Prognostick.

If the Lungs be wounded deep amongst the great vessels, though they escape the first nine days, yet they commonly terminate in a *Pthisis* or *Fistula*.

A Wound in the outer part of the Breast is cured as a simple wound; if it penetrate, you are to endeavour first the restraining the blood, then that the extravasated blood be discharged, and that either by the mouth by expectoration, or by the Wound, or by Urine.

Cure:

The way by Urine *Fab. Aq. Pend.* says, is by a branch of the *Azygos*, which, saith he, passes near the *Diaphragma*, by the Spine to the Emul-gents. Those that own the circulation will hardly allow of his *Hypothesis*; however if the matter of fact be true, that there is sometimes a discharge by

Urine, which I confess I have not yet observed in my own practice, it will be reasonable to propose as he doth: In this case *Diureticks*, as the *Decoct. Capill. Veneris*, *Polytrichi*, *Rad. Petroselini*, *Beton. Apii*, *Fanicul. Asparag.* To prevent inflammation, *Pisans* with *Ol. Sulphuris*, *Vitrioli*, *Barly-creams*, *Emulsions*, &c. The Ancients gave *Acetum* with warm water for dissolving the concrete blood, and restraining the present flux.

The second way is by Expectoration; & thereto our *Decoctum pectorale*, *Lobos*, *Syr. Capell. Ven.* *Jujub. Glycirrhiza*, *Oxymel.* &c. whereof our *Pharmacopeia Lond.* is full. This I have mentioned for their sakes who cannot have a Physician; but here I leave this work to them, these cures consisting much in their well ordering and prescribing internal Remedies, and content my self in the dressing of the Wound, as it appertains to Chirurgery. In the treating these Wounds there is a question, whether the Wound shall be kept open, or agglutinated; they that are for a speedy agglutination do urge it, lest the external Air corrupt parts within, and the heat expire: they that propose the keeping them open, do design thereby a readier discharge of Matter; for, says *Aq. Pendens*, if the Matter be to be discharged by Urine, it must first pass into the substance of the *Pleura*, then into the Vein *Azygos*, so into the Emulgents, then to the Kidneys, and through the Ureters and Bladder. If by Expectoration; then it must also first pass into the substance of the Lungs, then into the *Aspera Arteria* or Weazond, from thence cought up by the Mouth.

Whether  
the wound  
is to be  
kept open  
or not?

The Au-  
thors judg-  
ment.

In my practice in these Wounds of the Breast, I  
confi-



consider the wound how it is capable of discharging the extravasated Blood and Matter, if it was inflicted so as that the Blood or Matter may be there discharged, then it is to be kept open, the wellfare of the Patient depending mainly upon the well-dressing and governing it; but if it do not lye well for evacuation of that extravasated blood, then it may do hurt, so ought to be healed up.

A person of about 23. years of Age, of a good habit of Body, wounded into the Breast, upon which followed immediately great effusion of blood, almost to the exhausting of his Spirits. Mr. R. Chirurgion, and my self, were presently sent for, we find him lodg'd in an Inn near Fox-Hall, we view'd his wound, it was four fingers above the *Cartilago ensi-formis* a little to the left side; he laboured under a small pulse, fainting often: Dr. W. & Dr. Wed. came in while we were providing dressings, the wound was large and penetrating, we made a soft Tent with a thread fastned to it; which in these wounds you must be sure to do, lest you lose it in the body: This Tent we dipt in a mixture of a powder composed of *Bol. Armen. Sang. Dracon. Thuris, Mastich, &c.* with a new-laid Egg and a Pledget spread with the same over all, with *Empl. à Bolo*, and Compress with convenient Bandage. The Phycians prescribed such things as restrained the bleeding, and were proper to resolve the concrete blood, and withall to relieve his fainting spirits: that night he rested ill, the next day when we met, seeing him labour under great difficulty of breathing, with pain above the *Diaphragma*, his Pulse quick, little Urine, and that high, we agreed he should be let blood presently,

Observ. I.

How to  
order  
Tents in  
penetrating  
wounds of  
the Breast.

sently, which was done accordingly in the left Arm, the blood flowed with a quick stream, we took about six or seven ounces, a meer *Serum*, but the Patient was relieved by it; we took off our dressings to look upon the wound, whereon we found some blood and *Sanies* discharged: we then dressed him with *Terebinth. Lot. in Succo Lamii* adding some of the former powders with *Vitell. ovi*, this upon a Tent as before, with an Emplaster and Bandage over: Thus we continued to dress him, until we see the bleeding cease. In wounds within the body, I have always endeavoured to preserve the native heat of the part, and further the discharge of Matter from within, by keeping the wound open, until it lessened, and the ill symptoms went off; but shun the casting in of liquid Medicaments which are not easily to be gotten out again, they commonly proving very destructive. Here the Physician is to act by Internals, we only to assist by keeping a way open, if it may be, for the discharge of what is extravasated and corrupted within the cavity, and commit the cure to Nature. In this Person here was a great effusion of blood upon the receipt of the wound, and the orifice large to discharge the extravasated blood and Matter; the Physicians careful in restraining accidents, and removing what he laboured under; through all which our work succeeded prosperously, so as parts within united; we threw out our Tent, and by *Sarcoticks* cured this wound without, and the Patient was restored in few weeks to perfect health, and continues so.

Obsev. 2.

Another person was wounded into the Breast below the fourth Rib on the right side, coughed up much

much blood at times ; Sir *Fr. Pr.* was his Physician, he prescribed him *Ptisans*, Pectoral decoctions, &c. by which, and by often *Phlebotomy* the symptoms went off, the wound digested, the Patient rambl'd abroad, and was cured by such dressings as I left for him at his Chamber, I seeing him no more until he was wounded again.

Another wounded in the right Breast, coughing up much blood, with great pain and difficulty of breathing, I took away ten ounces of blood presently, and ordered him ( it being then night ) some Syrup de *Meconio* & *Jujub.* in a draught of *Aq. Papaver.* with a few drops *Sp. Sulphuris*, he slept well that night ; against the morning he had the *Decoct. Pectorale* ( the hotter herbs left out ) and it I sweetned with *Syr. de Ros. Sic.* & *Jujub.* with *Sp. Sulph.* this he drank in the morning, and at other times as he list'd ; by his disorder, he cough'd up blood at times, and I let him blood as oft, in the while I kept his wound open and digested : Upon another relapse I began to be sick of him, and perswaded him to send for a Physician, Sir *Ed. Graves* was call'd in, who see his wound almost cured, we agreed and let him blood : and from that time he continued well. Observ. 3.

A person run through the Body the breadth of three fingers under the right Clavicle, and out below the *Scapula*, was first dress'd by the Chirurgeon near the place where he was wounded : I found him in his bed faint and weak, but without pain or difficulty of breathing, Dr. *Bacon* his Physician : The next day I met him and Mr. *Sh.* Chirurgeon to his Highness *Pr. Rupert.* The patient had rested very Observ. 4.

ill the preceding night, had bled from his wound in his back through the bed, and fowled many Napkins that night in coughing up blood, we took off the dressings from the wound in his Breast, from whence there was blood discharged, and more came out in the dressing: I dressed up the wound with a short Tent dipt in a little *Terebinth*, with *Farina Volatilis*, a few of our Agglutinative powders *cum Vitello ovi*, with an *Empl. Diacalcith*, over it; the other wound under the *Scapula* was painful, but so small as it was not reasonable in our judgments to keep it open; we laid a Pledgit of the same mixture with an Emplaster upon that, and dressed it no more; this method of dressing I continued, and let the Patient bleed: The third day he coughs up blood, and some little issued from his wound for a few days; after four or five days I waited upon him to his lodgings in *London*, by the way he cought some blood, and so more or less day and night; but by the care of his Physicians it lessened, his wound digested, and I now kept in it a hollow Tent made of a *Sparadrap*, which was composed of *Resina, pini, Gum. Amoniac. Bdelli. Galb. Terebinth. & Cera*, with *Pul. Ireos*, dipt in a little *Mel. Ros. Rubr.* This way of dressing I continued until the coughing of blood diminished from twelve Napkins in a day and night, to ten, eight, seven, four, two, one, and but one Napkin in a week, and after that in a weeks space I see no blood one way or other, nor any symptom of ill. I then call'd in his Physicians together, and severally, and had all their positive judgments for throwing out the Tent, and healing up the wound: I did so, and in a week more cured him; five days after, or thereabouts, he sent me his thanks by his servant;

servant; and within few days after I made him a visit, and there met Dr. *Willis*, who enquiring of me whether his wounds were cured, I desired that person that he would shew the Doctor whether they were or not, he presently stript himself of his shirt, and shewed the Doctor, who both see and felt their scars, and replied they are well.

A young man wounded in the Breast, labouring under very great pain and difficulty of breathing, with a cough, sent for me late one night, he shewed me some little blood he had then coughed up: he had been wounded the night before by a man standing at a door some steps higher than himself, as it were over him, thrusting his Rapier from within the breadth of two fingers of the right Clavicle downward into the Lungs, the Patient run into that house bleeding much, and was seized with such difficulty of breathing, as he was forced to stretch his arms at length over his head, without which doing he could not breathe; he had been let blood twice, and prescribed *Pisians*, &c. But for all this he was little relieved, I presently let him blood about ten ounces, and ordered the Apothecary to give him a draught of *Aq. Papaver.* with *Syr. de Meconio & de Ros. Siccis*, with a little *Aq. Cordial. frig. Sax.* and against the next morning to send for a Physician to meet me, they did so; when I came in the morning, I found the Patient marvellously relieved, and resolved to remove his lodging, which was now by *Scotland-yard* to his own in *Wildstreet*: in the presence of his Physician Dr. *St.* I took off the dressings, found his wound small and shut up from within, but not skin'd, and if it had not, yet the wound within

Observ. 5.

was

was so much below this without, as it was not capable of discharging the Matter : So this was not worth my attendance, the wound within was the work of the Physician, however he continued me with his Physician, and we agreed to bleed him again; we did so, taking away about  $\text{zviij.}$  of blood, and the Physician proceeded by Clysters and Internals proper in his case : That afternoon the Patient, unknown to me, pursued his intention of removing to his old lodging in *Wild-street*, where going up three pair of stairs to his chamber, he relapst into the former difficulties of breathing with pain and coughing blood, and in the morning after where I met his Physician, the Patient seemed to me quite tired, labouring under great oppression; and by his pains about the *Diaphragma* and Back there was suspicion of extravasated blood; to relieve him there was a necessity of taking away a little blood; we took away some four or five ounces, and proceeded with Embrocations, Lohocs, Pectoral Decoctions, &c. and got off this difficulty in five or six days, then I left him : But after that, by disorder he relapst again, and was freed again the same way by his Physician, and since holds well, but I never see him since.

The Authors observation concerning the discharge of the *Sanies* of the Breast by Urine.

Of all these wounded Patients, and many more I have helpt to cure, I never see one that I could say passed their disease by Urine, nor many of them that passed their Urine well during the time of their lying under these wounds; nor have I often seen them who recover, expectorate any such quantity of Matter, as might be thought to proceed from the great quantity of blood extravasated : They cough fresh blood most of them, like to what they

they discharge from their wounds, but more florid.

Those who do cough great quantity of Matter from these wounds made by a sharp Weapon, or avoid it by their wounds, do seldom well: They usually terminate in a *Tuber*, with or without a *Fistula*: Yet by the ninth day one may truly predict their present recovery, if all things have been rightly administred.

## CHAP. IX.

### *Wounds of the Abdomen.*

A Man wounded with a Rapier into the belly, through the Right *Hypocondrium* out to the side of the Back, is brought to my house one night to be drest, he had bled much; I considered the wound, see it had past through, the orifices were small, little advantages to be made by keeping them open, yet I put in two small Tents dipt in a little Digestive *è Terebinth. & Vitell. Ovor.* and drest up with *Empl. è Bolo*, and a Bandage over, and advised him to go to his bed and keep quiet. I gave his friend *ʒvj. Syr. de Meconio*, mixt with a draught of *Aq. Papaver.* with a little Cordial-water for the Patient to take in bed: The next morning I found him hot, and his Pulse a little disturbed, but without symptoms of any part of the  
*Viscera*

Observ. 1.

Signs of  
the inward  
*Viscera*  
hurt by a  
wound of  
the *Ab-*  
*domen*.

Digression  
concerning  
the ill use  
of Tents.

*Viscera* wounded within : neither Tension of the Belly, Collicke, Vomiting, or ought by Urine or Stool. However I Let him blood about 10 ounces, and ordered him to keep his bed, and a Clyster of Milk in the afternoon with Sugar, and at night his *baustus* again. The next day I opened his wounds, and considering here was no Symptome of hurt within by Urine or Stool, nor Tension nor Swelling, only the wound a little heated by the Tents, I threw them out, and drest both the wounds with pledgits spread with the same digestive, Embrocating the parts with *ol. Ros.* drest him up as before, and desired him to keep his bed six or seven dayes. Two daies after I drest him again and found all well, with Inclination to cure ; from that time I drest him no more, but ordered him to keep a spare diet, and to lie quiet in bed, and if there were occasion I would see him again : my servant drest him afterward, and before the seven days were expired he was well and walkt abroad not complaining more of that wound. So I have happily sometimes cured such wounds through the body ; in this wound here was no considerable part toucht, yet if the wound had been kept tented with long tents, they might have stir'd up inflammation, or so the Air might have altered the parts within, or the Matter offended them, whereby putrefaction, Collicke and Ill accidents would have followed : But what could the Chirurgion have advantaged the Cure of his Patient, if blood had extravasated within, by keeping such little wounds open ? Yet if it be not done, he is usually condemned by the common Vogue ; therefore it is, that against their own Judgments they keep them tented often to the ruin of their Patient.

If



If in these wounds of the Belly the small Intestines be wounded, there follows a continual vomiting of Choller with Gripping, and death within few daies; Signs of the gutts wounded. if in the first dressing these wounds a Chirurgeon should propose a cutting open the wound, to seek the wounded *Intestine* to stitch it, the friends would not permit it, nor in truth have we Authority or Example for it, so we have nothing to do but stitch up the wound, and refer the Cure to Internal remedies, yet at last when he is dying, they will wish we had attempted it. In the great *Intestines* where they are fleshy, if the wound be not great enough, you are to enlarge it and seek the *Intestine*, and stitch it up with the Glovers stitch, and cleanse the Bowels from the Excrements, and sprinkle the Sutures with some of your Incarnative powders, and reduce them to their places, and stitch up the belly, as you shall see presently: you are in these cases to give your Patient Clysters made with Chicken or Veal-broath, wherein Barly *flor. Ros. rubr. Chamom.* hath been boyled, adding the yolks of Eggs to it, with *Mel. Ros. & sacchar. Ros. an. ʒj.* and Internals such as are glutinative, as *decoct. plantag. Equefisi, pimpinella, pilosella, Rad. Consolida. ma.* these sweetned with Sugar of Roses, *spec. diatragacan, conf. Cydon. Conf. Ros. rubr. boli. Terra, sigill:* their diet must be sparing, drying and agglutinative: they must be Let blood, and after some days their Clysters must be agglutinative and often repeated. After this manner the wounds of the *Viscera* are to be treated, only in them you are to keep the wound open in some declining part, whereby they may be drest if occasion be, and discharge their Matter. If a flux of blood happen as in wounds of the Liver and Spleen,

the

Of opening the belly in wounds of the *Intestines.*  
Cure of wounds of great *Intestines.*

the Ancients commonly commend *succ. piloselle*, *pimpinell*, *plantag. Pologoni*, with *pul. Bol. Terr. sigill. sang. Dracon. Thuris*, and such like mixt, and put in by Tents, and after the like mixt with *syr. Ros. suc.* and parts about Embrocated with *ol. Ros. Mirtyl. & Empl. Diacalcith.* over all, or a Cataplasme *ex farin. Hord. fabar. flor. Ros. Rubr. cott. cum hydromelite* and treat them by Internals as I have said, such as are agglutinative, exsiccant and detergent, I refer you to the treatise of wounds made by Gun-shot, where you shall see their various Symptomes and way of Curing.

A wound  
in the  
Abdomen.  
Observ. 2.

A Man wounded and brought to *Lambeth* sent for me one morning early, he was wounded transverse the belly a little below the Navel, on the left side the *Omentum*, and *Intestines* thrust out, and kept close with a Hankerchief in his hand, I see parts fresh; the *Omentum* or *Call* much out, but not altered. I caused warm cloaths presently to be held upon them very close, and the Patient to be laid low with his head, his Hips raised up, and by the help of his friends raising them up and shaking his body, I reduced them. Then they leaving his Hips high, and he declining with his body on the Right side, by the help of one pressing with his hand a little above the wound (by which the Lips of the wound were a little turned upward, and the *viscera* kept down;) I with a strong Needle a little crookt at the point with a strong Thread seared take hold of that lower lip, and near the end past my Needle first through the *Peritoneum*, and then on the opposite side through the flesh and skin, leaving the *Peritoneum*, and so go along passing the Needle from without Inward, till I sewed

Manner of  
sewing the  
*Peritoneum*  
in this  
case.

sewed up the wound, which cannot be very close, then I pulled the stitches as close together as I could, and fastened my Thread. If any part of the *Omentum* had been altered in its Colour, I should have tyed it hard and cut it off, and placed it with the Thread hanging out, and so I would have served a great part of it, if I could not have reduced it, I having done so heretofore often; but if the *Intestines* had been so swell'd, as by no way of fomenting or position I could have reduced them, I ought then to have cut the wound more open, but these were easier reduced, and the wound sticht, I then sprinkled them with *pul. Aloes, Colophonia, sang. Dracon. Mastic, sarcocolla, Bol. &c.* and over them pledgits of my Incarnative, and with some of these powders mixt *cum Albo ovor.* to strengthen my stitches, I applyed them upon a cloath over all, and with compress and a strong Towel bound all fast, then after a while let him bloud, and ordered him to ly quiet upon the well side, and to a spare diet, and to keep his body soluble by Clysters; every other day I dress'd him after the same manner, and after the wound seemed to be Cicatrized, and that my stitches began to fret, I cut them out the Eighth or Ninth day, and after with the continuance of my *sarcoticks*, I cured him very well. These wounds are not subject to great Inflammation or defluxion, but by reason of the fatness and thickness of the Lips, and manner of sewing, 'tis a troublesome work; and yet if they be not so sticht as the *Peritonaum* and fleshy parts may unite together, a Rupture follows to the great trouble of the Patient, and shame of our profession: the *Peritonaum* bears a great stress, therefore you must be sure to take good hold with your stitches,

and

What to have been done in case the *Omentum* had changed Colour.

What if the *Intestines* were swell'd

and if you doubt their holding, make dry stitches over them and good Bandage.

## CHAP. X.

### *Of Wounds in the Head.*

**W**ounds in the Head according to *Hippocrates* and our daily experienced are full of danger, how slight soever they may appear to a common eye.

In this discourse I propose to write of them, not only as they are made by cut, stab, or bruise, but also of those made by Gun-shot, and so by Anticipating part of the discourse next ensuing, to give you the full doctrine of wounds of the Head made by what Instrument soever without the necessity of future repetitions, and that you may understand the *Basis* whereon these cures are wrought, I shall represent the head to you as it is framed.

Parts of  
the head  
considered.

The Head according to *Galen. de usu part.* is the noblest Member of our Body, the principal faculties being there seated, for the use of which it was ordained : and is so contrived as to be the fountain of the Animal spirits, and also to contain the principal Organs both of the Internal and External senses.

In

In the first part, the hairy scalp presents it self The Hairy to our eye, and therein is to be considered its Scalp. Thickness, Sense and Vessels, with the Muscles that lie under it. The Hairy Scalp is thinnest on the top of the Head, nor is there any Muscle between it and the Skull in that part, unless you will call the *membrana caruosa* a Muscle, (which some men of late do, and possibly not improperly;) and here the rather, because by it many men move the whole Scalp. If you doubt of a fracture there, you may boldly cut into the Hairy Scalp, it is of an obtuse sense and easily healed up again. But be cautious how you make your Incision in the Forehead. forehead, where a transverse Incision may cause the Eye-brows to fall over the Eyes; therefore if you are forced to make Incision, let it be according to the length of the Fibres, and avoid the *vena frontis*, lest its bleeding disturb your work. And be careful that you make no Incision upon the Temporal Muscles, for thereby Convulsions and Temporal Muscle. other ill Accidents may happen.

Under the Hairy Scalp lyes the *Pèricranium*, Pèicrani-um. which we are to cut through, in making way to the *Cranium*; you are to raise them both together when you lay bare the *Cranium* for the use of the *Terebra*; for if in perforating you tear this Membrane, Inflammation and Fever may follow, the *Pericranium* arising from the *dura mater* through the Sutures; by which continuity that may also partake of the Inflammation.

The *Cranium* follows, which is a Bone com- Cranium and Su- posed of many joyned together by Sutures, of tures. which

The way to  
find the  
Sutures.

which there are five concern us *Coronalis*, *Lambdoides*, *Sagittalis*, &c. two false ones. In perforating the *Cranium*, you are to shun these, ( if you may ) for through them the *dura mater* passes, being continued unto the *Pericranium*. The Sutures divide the Bones of the *Cranium*, by which one part of the *Cranium* may be preserved entire while the other is broken, which otherwise would be in hazard ; These Sutures are weak in resisting Blows, and upon them also Matter may be easily contracted and make a *Caries* the sooner, and sooner worke through to the brain than in either parts of the Skull. It is necessary to know them well, lest as *Hippocrates* well cautions, you take them for Fissures. The way of finding them is, by passing one string from ear to ear, and another from the Nose to the Crown of the head ; the former of these shews you the Coronal Suture, the second the Sagittal, which usually begins at that point where these lines intersect, being the part where we make *Fontanels*, and reacheth to the Crown of the head where the *Lambdoides* begins ; sometimes it be- ginneth quite at the Nose. The *Lambdoides* begins at the end of the Sagittal, and goeth forked down the two sides of the *occiput* : of the *Sutura nostra* : the two chiefly to be regarded are the *Squamosa*, which run under the temporal Muscle of each side, round about the outermost verge of the ear.

Thicknels  
of the Cra-  
nium.

You are also to take notice that the *Cranium* is thinnest in the middle part of the head, and thickest in the hinder part, and of a middle thick- ness in the fore part : Hence it is that wounds are most dangerous in the Crown of the head, where the Skull by reason of its Tenuity easily communi- cates its hurt to the brain, and also for that the upper

part

part of the brain lyes there high, one of the largest *Sinus* being immediately under the Skull, and many Capillary veins running so close with it, as to make themselves Trenches in the Internal part of the *Cranium*: Wherefore upon a blow or concussion in this place, the veins may easily be broken, and the blood extravasated between the *Cranium* and *dura mater*, and ill Accidents follow.

The *dura mater*, a strong Membrane, is placed under the *Cranium*, which being wounded is attended frequently by Palsies, and in progress of the distemper by Convulsions and other ill Symptoms; and the greater if wounded in the middle part of the head according to its length, there being many Vessels, which if they chance to be cut, will fill the vacant space between the *Cranium* and *dura mater* with blood.

The *Pia mater* lies upon the body of the Brain so close, that a wound cannot be made into the *Pia mater* and the Brain escape; and from its many veins a flux of blood must follow.

The Brain lies under the *Pia mater*, in whose ventricles is lodg'd the *Plexus choroides*, and under whose *Basis* ly large numerous branches of Arteries and Veins, which by great blows of the head may be broken.

From the Description of the head we shall proceed to the Description of its wounds, which are strictly so call'd, when any part of the skin, flesh, bones, membranes or brain is either cut or torne, or when more of these are hurt together.

Contusions and Concussions do not truly belong

to this place, yet for the better Information of the young Chirurgeon, I shall say something of those also, and shall treat of all these things by the following degrees.

1. First, there may happen Contusions, or great and violent Concussions of the Brain from a blow, fall, &c. when there is no visible wound either inward or outward.
2. Sometimes this Concussion is accompanied by a rupture of the Vessels of the *Meninges*. Sometimes a fissure of the Skull, or a spill broken off from the inside of it, &c. the skin all this while remaining whole.
3. Other while the wound begins on the outside being made by Sword, Bill, or Bullet, &c. and either goeth no further, or else penetrates sometimes to the Skull, sometimes into the first Table, sometimes through both, or yet further through the *dura* or *pia mater*, or into the brain it self.
4. Some are meer cuts, others contused wounds, and in Gunshot, the very outward parts of the head, as hair, skin, flesh, bones, &c. are often driven by the violence of the Bullet into the *Brain* it self.
5. Of Fissures some are directly under or near the place of the Blow; some on the quite contrary side, and are called *contra fissura*.

#### Signs.

*Celsus* in his 8 lib. & 4 ch. gives you the signs; when you are call'd to such a Patient, presently saies he, you shall enquire *num vomuerit*, &c. whether he vomited, or was stupified at the first receipt of the Blow or Fall, or a Resolution of the Nerves followed, or *torpor*, or *delirium*, or raving; these shew the Membrane of the brain affected, and the Patient in great danger.

But



But if none of these were, you may then *ambicare* *an os fractum*, doubt whether the Bone be broken: then it is to be considered, whether it was Stone, Iron, or Lead, that he was hurt withal, and with what force the Blow was given. But if there be a wound, nothing is more sure than the finger or Probe; if it feel smooth or slippery, the *Cranium* is safe: But if you feel any Asperity or roughness, if it be not the Suture, then you may be assured of a Fissure or Fracture, the holding a Tread between the Patients Teeth, or biting of a Crust, is mentioned as a sign of a Fracture, but this way is very uncertain: To find hair cut in a wound may be a sign, if you consider, no small force will cut a hair there.

If by your Probe you make no discovery of the fissure, and yet the Symptomes be grievous, then lay it open, and if the Fissure do not then appear, rub the bared *Cranium* with Ink, and wiping it off again, you will see the Ink remaining only in the Fissure or crack, then *Rugine* it.

If no breach of skin appear, you must consider the outer side, *numquid locus mollior sit, & tument, eumque aperire*; whether any part be softer and swell, which you must open and see whether there be any Fissure, *nontam magno negotio, cutis sanescit etiamsi frustra dissecta est*, it being no great matter to heal it again, though it should be laid open in vain.

In the Prognostick, wounds by much how nearer the Brain, are so much the more dangerous; the solution made by Incision is of less danger than those made by puncture, this of less than those made by Contusion; and those of Gun-shot worst

Prognosticks.

of all wounds. In the middle of the head most dangerous, the hinder part least dangerous, the fore part of a mediocrity between both, it having passages near for discharge of its blood and matter: Wounds of the Sutures are dangerous, but those are more or less as they fall into good or bad Chirurgeons hands, and as the Patient submits to the method of cure. A simple wound by a Blow hath been through ill Chirurgeons, &c. the cause of much danger, that in skilful hands would easily have been cured: All wounds save those of the Brain are curable, if the Chirurgeon be timely call'd in, and that it be discovered in such place where he may lay open safely.

Contusions  
of the head.

We begin with the cure of Contusions of the *Calvaria*, where the outer skin is whole, yet with great attrition of the Musculous flesh and membrane underneath; which often happens from blows or Falls, and are subject to great pain, tumor, Inflammation, and Apostemation, &c. caused through the Ill habit of body, or untimely applications, therefore it requires your special care in the first place to prevent the afflux of humors and pain, which is performed presently in the beginning by repellents and astringents, which are to be often renewed, lest they heat the part affected. You are in the first place to shave the hair, if there be any, then Embrocate with *ol. Ros. & myrtil. cum aceto*, and apply this or such like over the contused parts; *R<sup>x</sup> farin. hordei, fabar. an. ʒvj. pulv. Nucis, Cupressi, balaust, Alum Rochæ, Ros. rubr. an. ʒj. ol. Ros. ʒiij. Alb. ovor. nu. ij Aceti q.s. ft. Cataplasma*. You are to make your Bandage over this, to further the expulsion of the serous humors from the grieved part, therefore your Bandage begins there, and termi-

terminates where it may resist the Influx; then bleed, &c.

The second day you are to foment with Red wine, wherein hath been boyled *flor. ros. rubr. Bacc. myrtill. fol. beton. & flor. Chamom.* and if much pain Embrocate with *ol. Ros. & Chamom.* or decoct. *beton. ros. rubr. Rad. Althe. sem. Lini, fenugraci*: If after these your endeavours the part affected do tend to Apostemation, you must then use *suppuratores*, and open it in the declining part, and digest it as in a *Pphlegmon*; but if the pain do mitigate, then it will be proper to discuss and breath out the Serosity by such like, *Rx farina hordei fabar. an. ʒiij. flor. ros. rubr. Bacc. Mirtill. pulv. an. ʒj. sumit. Absinthii, fol. beton. flor. sambuci & chamom. pulv. an. ʒiij. sem. Cumini, pulv. ʒj. mel. ʒij. coq. in vino Austero, ft. Cataplasma, addendo ol. Cham. Ros. an. ʒj.* apply it; then in the next place comes in the use of *Emplastr. Vigonis*.

If there happen a Concussion from some great Concussion. Fall or blow without a wound, we cause the head to be shaved, Embrocate with *ol. Ros. & myrtill. cum Aceto*, all the head, neck and behind the ears, and apply a Cataplasim with *farin. hordei. fabar. bacc. Mirtill. flor. ros. rubr.* decocted in Red wine or Oxycrate, adding *mel. ros.* to it or *Empl. vigonis*, or such as this which is his, and hath been often used by me in such cases, *Rx furfuris Tritici ʒiiij. far. lentium ʒij. flor. ros. rub. Bacc. Myrtillor. Balauft. an. ʒj. Calami Aromatici ʒjss. flor. chamomel. Melilot. pulv. an. ʒss. nuc. Cypress. no. 6. pulver. omnia coq. in vino Austero q. s. ad consistent. Cataplasmatidis addendo olei Rosati Chamom. an. ʒiij.* or add wax to it, and make it into the form of a Cerott;

you may make fomentations of the like ; you must remember in these Concussions to bleed largely, even to defailancy of spirits, according as the Symptoms do shew to you the greatness of the Malady, and as strength of body will permit, and keep the body soluble by Clysters, also Julips, Emulsions, and what else may allay fermentation of the blood,

Cure,

Simple incised wounds,

In the cure of wounds of the head, if it be a simple wound only to the *Pericranium*, the lips are to be brought close together ; the stitching these wounds is objected against by some, lest thereby Matter should be pent in, and Inflammation and *caries* of the Skull follow, but done judiciously ; it is safe, if you can satisfie your self that the wound ought speedily to be healed. Abroad I have seen them as commonly sticht as other incised wounds, and do my self in great wounds of the Scalp make a few stitches to keep it close ; however you are not to croud those wounds with dossils, but having shaved the hair bring the lips close together, and cure it by the first Intention, *vid.* Agglutination ; as in simple wounds, by *Arcens's* Liniment or some incarnative, and keeping the lips close by *Empl. à Bolo*, or with some of your Astringent powders mixt with *album. ovor.* Thus in a few days all these simple incised wounds may be cured.

Observ. 1.  
Wound in  
the Temporal  
Muscle.

In a wound in the right Temporal Muscle, where the Artery was wounded, I have often sticht them up without any ill Accident. *Smith* a Tanner sometimes in *Chester*, Captain of a Company of Dragoons pickt up in halt to disturb us in our flight from the Battel at *Worcester*, was bleeding almost to death, by a wound he received from some of our routed Forces, when I was brought a prisoner to his Quarters,

Quarters, I sticht up his wound, taking the Artery up with the lips and with a little wheat-meal, and the white of an Egg, laid over all upon a Compress dipt in *aceto*, bound his head up; this was upon a necessity, but this served to keep my stitches close; after two or three days, I dressed him again, and found all quiet, I now sprinkled the lips with *pulver. Thuris, sang. dracon. an. p. eq.* and applied a pledget with *Linim. Arcei & Empl. diacalcit.* all which I was now supplied with from *Warrington*; and the next dressing cut out the stitches, and drest him up again with the same as before, and from that time he was cured: which was before he had recruited his spirits from his loss of blood.

In wounds of the head where you cannot cure by the first Intention, as where the wound is contused or some part of the Hairy Scalp torn off, there you are to digest with *Terebinth.* and the yolk of an Egg, I commonly boyl the *Turpentine* a little to make it thick, otherwise it is too slabby; add a little *farin. Hordei*, After Digestion I add a little *Sarcacoll. Myrrha, Aloes, pul. Ireos*, with *mel. Ros.* by which it serves to deterg, I commonly Incarn with this of *vigoes, R. ol. Rosat. ʒvj. ol. mastich, ʒij. pinguedinis vitulin. porcin. an. ʒiiij. fol. plantag. matrissylva, Beton, pimpinella, pilosella, flor. Anthos. an. Mss. vini odorif. cochl. iiij. coq. ad Consumpt. vini in colat. add mastich. Gum. Elemi, Resin. pini, an. ʒj. litharg. Auri & argent. an. ʒij. Minii ʒx. Terebinth. vener. ʒiiij. cera q. s. ft. ung. S. A.* or with *Lin. Arcei*; touching the lax flesh, as I think fit with either of the stones, and by the help of *ung. Tutia mag.* Lint dry or dipt in *sp. vini. Aq. calc. Alum*, and prest out, I cicatrize these and all such like wounds.

Contused  
wounds,

If

*Pericranium* laid bare or cut.

If in a wound of the head by Incision the *Pericranium* be bared, if there be no fissure, you are to keep the Air from it by bringing the lips of the wound close together, that the bone may Incarn: But in these wounds *Fabr. ab Aq. Pend.* says, and by the authority of *Galen*, that you ought to *Exfoliate* the bone; for says he, it is not likely so thin a membrane as the *Pericranium*, adhering to the bone, can be cut, and the bone not hurt; and if the *Cranium* be but a little hurt, there is a necessity of *Exfoliation*: In my Practice I have often met with wounds in the head, where the *Pericranium* hath been cut, and the bone only bare; sometimes also the bone is cut: But if I came into the first dressing, it hath for the most part Incarned without any difficulty, and the better for the little cut made into it. But where the bone hath been bared by a Contusion, the bone is commonly altered by the Air, or Gleet from the contused flesh, and doth for the most part require *Exfoliation*; yet in this case I have cured without *Exfoliation*, but with great difficulty.

*Cranium* laid bare by contused wounds.

If a Contusion be made by a blow or musquet-shot, when the force is spent, or when the head is armed, if there be no wound or symptom of fracture, or the like, you are to shave the hair off, and Embrocate the part well, and apply over all a Cataplasm, à *Farin. Hordei, Flor. Ros. Balaust.* decocted in Oximell, adding some *Ol. Ros.* and let your Patient bleed, and if there be a wound joyned with it, and made by shot or blow, you are to digest that wound as in contused or Gun-shot wounds: If there be not a way for discharge of Matter, you are to make one, that it be not shut in,

in, and cause inflammation in *Pericranio*, and Fever follow. After digestion and separation, you are to proceed to *Exfoliation* of the bone; for in such wounds the bone is Altered, both by Air and Matter. In order to *Exfoliation* you are to consider, that if the bone were not hurt, it is smooth and slippery, as it were polished, and flesh difficultly grows upon it; wherefore by the Authority of *Galen* and your own reason, you are with *Rugines* to make it rough and thin, that you may make way for the *Callus* to sweat out of it: In this case if you rasp it here and there thin, till you see the blood ready to come out of it, the bone will thereby be sooner supplied with materials for generation of flesh; but if your Patient will not admit of *Rugines*, as in children it will not be allowed, then you are to keep your dossils with *Sarcoticks* close to the lips of the wound, and make your *Exfoliation* from the edges, that the sound part may thrust off the rotten bone; for neither Crabs-eyes, nor any Medicine inwardly prescribed, or wine outwardly with Lint or other medicament applied to the middle of a bone, will signifie any thing to the *Exfoliation*; nay the while you are so trifling, the matter from the edges will rot the bone underneath, and in continuance pierce through the first table, and run underneath betwixt the two tables, and do much mischief, and put you upon the use of the *Terebra*, in the curing of your Patient. If therefore you propose *Exfoliation*, then according to the Ancients you are to use *Rugines* to scrape the bone, and after the use of them, the bone requires its proper medicaments, *Sarcoticks* most drying in *potestate & actu*, as *R. Rad. Ireos, Aristoloch. Rot. Thur. an. prt. eq.* in moister bodies Thus alone; I suppose

suppose that bones raspt require digestion, and therefore dress it with liniment *Arcei*, and such like spread upon Pledgits of Lint, and so commonly Incarn them, then proceed with *Ung. Turis*, &c. to cicatrize.

*Cranium*  
wounded,  
or fra-  
cture.

Against  
round in-  
cisions up-  
on surmise.

Hitherto we have written of wounds and contusions of the hairy scalp and *Pericranium*, and of the *Cranium* laid bare, as also of concussion: now follow those wounds of the *Cranium* it self, whether by cutting or puncture, by sharp or pointed weapons, which cannot be without solution of Continuity of the hairy scalp, but by a musquet-bullet shot at a distance, by a fall or blow the skull may be fissured or fractured, and the hairy scalp whole, and this fracture or fissure under the Contusion, or in some other part: If the symptoms do demonstrate that there is a fracture or fissure, you are then without delay to open the hairy scalp, according as the part will admit, Angular, or in the manner of a Cross, or of the letter T, that the fracture may be discovered by the raising up of the hairy scalp with its *Pericranium*: For if you shall in doubtful fissures or fractures make a round Incision, and take out the whole piece, then if there chance to be no fissure, you have made your self a long work to little purpose; and if your fissure run farther than your Incision under the *Calvaria*, not discovered sufficiently, you are to cut it open that length, by which it will appear you have through mistake laid it open more than was necessary in one place, and too little in another, doing that which neither *Hippocrates* nor any of the Judicious would ever allow: Whereas if you made it without cutting off a piece, but only raising the scalp,



scalp, you might, I say, if reasonably judged, have laid it open, so as you might have discovered the fissure or fracture; and if yet part of the fissure or fracture had lain undiscovered, you might have stretched your Incision to it; and in case after all, there had been no fracture or fissure which often happens, as in counter-fissure, then you might have laid the hairy scalp down again, and easily cured it, which by an excision of part of the scalp you have made, you cannot do.

As to what may be objected, that the raised up Lips may be troublesome to the Chirurgeon in his work, and are painful to the Patient; there is no such thing; for if the Incision be made the way proposed by the Ancients, and that the fracture or fissure be all in your view, you may order the lips of the wound as you please. Objection.

The *Cranium* laid bare, you are to fill up the place opened with dossills, pressed out of Red Wine or Oxycrate, or a Sponge prest out of either of the same liquors, and apply an Emplaster over all of *Diacalcith.* malaxt with *Ol. Ros. cum Aceto*, and bind it up.

The next day you are to consider the fissure, if it be so small, as you doubt whether it be one or not, then wet it with Ink, and wipe it off again, and where the fissure is, the Ink will discover; but if it do not, then this Emplaster is proposed; *R. Cera nova flava, Thuris, Laudani, an. unc. ij. Farina Fabar. Terebinth. Aceti an. 3j. Misce ad Ignem*: you are to apply it on the suspected part, and the next day where it is found moist, that there you are to *Rugine*. Trial of Fissures.

Depressi-  
on.

*Fallopins* tells us, that where the *Cranium* is contused, certain spots will appear red, not unlike those white ones which are seen in the nails of the fingers; but after the third day the blood exhales, and that redness ceaseth: If by the former you discover the fissure, or that the bone be contused, you are to *Rugine* the contused bone, and the whole length of the fissure; To which purpose and for that use to supply your self with various forms of *Rugines*: Whilest you are working with them, the lips of the wound are to be covered, that neither you hurt them, nor the Air offend them; sometimes these very small fissures, how inconsiderable soever they may seem, are the cause of the Patients death, there being often found extravasated blood upon the *Dura Mater*, the Veins being broken either by the concussion from the blow, or by the rough edges of the inner table next the Membrane: Therefore you are to consider the symptoms, and accordingly lay open either by *Rugines* or cutting into it, so as the *Sanies* may be discharged, and the Asperity taken away: But if there be a fracture of the *Cranium* in one or both tables with a depression of the bone and a fissure also, which often happens, you are presently to make a way to relieve the Membranes underneath, for they cannot be without great disturbance and inflammation, and a putrifaction will follow, whence those symptoms of Fever, *Delirium*, *Coma*, Convulsions, Palsies, and Death ensue, if neglected. In this case you are to consider, whether the fissure do discharge the serous blood or *Sanies*, and whether by cutting that fissure open, the depressed and fractured bone may not be raised up; if it may, then you are to proceed by enlarging that fissure, and

and there with your *Levatory* raise up the depreſt bone, and remove the fragments, and cleanſe the membrane from the Raſpings or ought elſe hath ſoiled it : But if the fracture doth not penetrate ſo far into the bone, nor there be any ſuch depreſſion or fear that *Sanies* is detained underneath, then you ought not to perforate the bone, nor expoſe the membrane to the Air, or more than is neceſſary ; in this your eye and ſymptoms will guide you.

In order to perforation of the *Cranium*, the bone Perforati-  
is to be cleared of its *Pericranium*, leaſt in ſetting on.  
on the *Terebra* ( or *Modiolus*, which are two ſeveral names for a Trepan ) you tear the membrane, then the lips of the wound to be covered, and the *Terebra* ſet on the breadth of a finger diſtant from the edge of the fiſſure, on the ſide which is moſt depending ; if it may be with convenience, when you have ſet it on, preſs upon it with your left hand, and turn it round with your right, you muſt uſe a little *Ol. Roſ.* or Milk, to cauſe it move the eaſier, and as it ſouls bruſh it, in the doing of which it will cool, or you may dip it in water to cool ; when you come to the ſecond table, which you will know by the bloud that appears, it will be required that you take out the pin & proſeed more warily, not liſtning to the pratling of the ſtanders by, but oſten liſting up your hand, leſt by your compreſſion or haſte you unawares fall upon the *Dura Mater* and wound it. All this while it is fit his ears were ſtopped, leſt the noiſe diſturb him, and the room cloſe. The perforation made in *Cranio*, and the bones taken out, you are to ſmooth away the Aſperity, which remains in the lower part of the main bone, and this is to be done by the *Lenticular* inſtrument made for that purpoſe.

If

First dressing after perforation.

If after this the membrane be fouled by the sawdust, from the bone you are to wipe it off with a little Lint upon your Probe; the part cleansed, you are to dress the membrane: About this first Application Authors differ, *Avicen* dress the Patient with Lenients, as *Ol. Ros.* *Celsus* he dressed the part with *Siccantia*, as with *Aceto acerrimo*, you may find him positively for it in these words, *Hic factis*, the perforation made, *ea Membrana acri aceto, respergenda est, ut si ve aliquid sanguinis ex ea profluit, cohibeatur, si ve intus concretus Cruror remanet discutiatur*; The Membrane is to be sprinkled with sharp Vinegar, to prevent the flowing of blood from the part; and that if there should remain any clotted blood, it may be discust. But the most part of the Ancients and many of the Moderns do propose Lenients, as *Ol. Ros.* that the crude *Sanies* descending upon the *Dura Mater*, in pus convertatur, may be digested into Matter: In this you are to be guided by your eye: If there be *Sanies* or putrification, *Mel. Ros. Spir. Vini*, and higher detergents are to be used, as the putrification is more or less. If there be much blood extravasated, or that you fear bleeding, that of *Celsus* may be proper; but if the blood exceed not in quantity as it seldom doth, and if it be recent, it possibly happened from some scratch of your *Terebra* or little asperity of the inner bone or Table, or if there be neither of these, but the membrane fresh, and of its natural colour, then you are not to grieve that membrane, new exposed to the Air with detergents, nor by the Acrimony of the Vinegar; for if you shall by scratching of the membrane make it bloody, and then dress it with either *Acetum* or *Mel. Ros. & Spir. Vini*, you shall then proceed contrary

contrary to the common Indications in Chirurgery, which teacheth to digest recent wounds before you deterge : And indeed what would you deterge ?

Therefore I do propose to you Lenients, not only by the Authority of those Ancients and Moderns, but by my own Practice. *Galen* proposed *Sang. Columb.* and the bloud of Turtles dropt warm from their wings, *Fallop.* and *Fabric. Aq. Pend.* propose, as I said, *Ol. Ros.* with *Resin. Abietis*, and afterward they increase the *Resina* and lessen the Oil ; but if there be putrification through the long lying of concrete bloud, then *Mel. Ros.* & *Spir. Vini* are proper ; yea *Mel. Egyptiac.* and higher as The thinner part. occasion shall offer ; otherwise in common cases of recent Terebrations by the Emplastick quality from the *Resina* ; the concoction is better made, and the part secured from inflammation, &c. It is to be proportioned to the habit of body ; dry bodies require more of the *Resina* and less of the Oil, and by this simple Medicament, I never failed of good digestion, and afterwards by the tempering this, (as I have said) have deterged and incarned, continuing it until the membrane was well incarned, not finding the least prejudice the bare bone had received from it ; but you must take care, you do not too much relax parts ; therefore after digestion, *Mel. Ros.* with the *Resina* instead of the Oil will be answerable to your intentions, both to deterge and incarn ; or you may use this to both purposes, its composition will commend it self, *Rx Terebinth. Venet. ʒj. Ol. Ros. ʒiiij. Mel. Ros. Colat. ʒiiij. Croci ʒj. Granor. Kermes ʒss. Sem. Hyperici ʒij. Vini Hispanici ʒiiij. Coq. ad consumpt.*  
H Vini

*Vini Colat.* add *Aloes* ʒj. m. In the use of Medicaments, you are to consider the part and habit of body, and add or diminish your simples accordingly, and so they will perform all intentions; if the wound be made by Gun-shot, then you are to dress the wounds as is said in simple Gun-shot wounds, and take out the *Eschar*, and afterwards deterge, as I have said, or with this, *R̄ Terebinth. Opt.* ʒiij. *Mel. Ros.* ʒij. *Succ. Plantag. & Apii an.* ʒss. *Coq. simul ad succor. consumption.* add *Farin. Hordei* ʒj. *Sarcocolla* ʒjss. afterwards add *Aloes* ʒss. *Myrrha* ʒiij. *Thuris* ʒij. and so it will incarn; and apply this *Cataplasma*, *R̄ Farin. Hordei, Flor. Ros. Rubr. Fol. Beton. cum Ol. Myrtill.* decoct it in Red-wine, and apply it over all. The Ancients used to the bone after digestion, *Pul. Arisfoloch. Rot. Rad. Iridis Pucedani, Myrrha*, as their *Sarcoticks* to sprinkle on the bone, which are very good, but Pledgits of Lint dipt in *Spir. Vini*, and prest out hard, will at such a time serve your purpose well; and an *Empl. de Beton.* over all, or *de minio Mag.* or the like; and where the flesh is luxuriant, touch it with either of the stones, or this *Pulv. Balauft. Ros. Rubr. & Alumin. an. prt. eq.* Thus at *Worcester*, a day or two before the *Battel*, a Gentleman attended the *Earl of Derby* thither, with a large wound cut with a sword to the *Dura Mater*, he had no other dressings on but a Linnen cap, the membrane covered with the shivers of the bone, it had not been drest, and may be the better for him, for if dossils in haste had been prest in the wound, he would have laboured under some severe symptoms; but the shivers lay loose upon the membrane, and he felt not his danger. I took these

Observ.

these lightly out, cleansed the wound, and drest him up with lenients, the short time we were together. Authors have set us a limited time to drest with this or that Medicament, as to the fourth day so, and from that to the seventh to deterge, and so the fourteenth day *Sarcoticks*, but herein you must make use of your own judgments, persisting to cherish the native heat of the part.

If the wounds penetrate to the *Dura Mater*, you must consider the force of the Weapon, and make haste to relieve the parts under the *Cranium*. But where they are made with Bullets or heavy blunt things, there they are often pasht into one another; there you are presently to lay open the hairy scalp, & raise it up from the *Cranium*, and relieve the oppressed membrane; but if the flux of blood should be so great as it will not permit, fill up the part with dossils dipt in Wine or Vinegar; accordingly open it again as soon as you may, and in the while drest it up as hath been already said. These bones are to be hastened out with as much speed as may be, and the part afterwards drest with Lenients, as hath been said: If the opening in the fractured *Cranium* be not sufficient, make one in the most declining part, and raise up the bones, and free the membranes of whatever may offend it, but do not take out more bones than needs must, like some of those Chirurgeons I have met carrying them about, boasting in that which was their shame; for these bones in recent fractures do unite as those in other parts, therefore having raised them up, drest them lightly with the *Catagmatick* powders, and they will happily agglutinate and make your cure more facil. In these wounds of the *Dura Mater*, the lenients of *Ol. Ros.* or warm Pigeons-bloud are

Gun-shot,

proper, they are Anodyne and digest; *Ol. Hyper.* and *Mastich* are also good mixt with *Resina*, for the curing these wounds, *Fabric. Aq. Pend.* cites *Galen*, and he *Archigenes* using the *Succus Calamenthe* dropt into the wound, and sprinkling *Pul. Milii* over for incarnating them, the *Milium* moderating the heat of the other, he delivers them to us as *siccantia*, *detergentia*, & *incarnantia*. The uniting and incarning of the Lips of the *Dura Mater* is performed by a fleshy substance that ariseth upon the membrane, which afterwards as it increaseth, doth unite over it, and becomes one body, and grows firm; mean-while the bones within *Exfoliating* thrust from the side a *Callus*, which uniting with the forementioned flesh becomes one body with it, & filling up the place that was perforated, is in time more firm than the bone itself was; but in the while, you must be careful that your *Lenients* make not the part too lax by their greasiness, for so a *Fungus* will thrust out thence which may be vexatious to you: This in the beginning by desiccants, as *Pul. Cort. Granat. Balaust. Ros. Rubr. Alum. ust.* with a soft dossil and compression by Bandage, will be taken down, or if it grow very big by ligature it is taken off: But to tell you truly, I never met with any such like disturbance as is represented to us by Authors, nor shall you, if you use your desiccants timely: The *Vitriol* or *Allom-stone* insensibly takes this off, and disposes the part to cicatrize if daily used.

The *Pia Mater* is a most delicate fine membrane, and adheres so close to the brain, that it can scarce be wounded without a wound in the Brain; and these are most commonly mortal, for that it is full  
of



of Veins, and subject to great effusion of blood; the Brain wounded and exposed to the Air corrupts by reason of the external cold which soon extinguishes the little heat of this part. And by reason of the fluidity of the Brain, and contraction of the *Meninges* (or membranes) caused by the constant pain and irritation, the brain perpetually oozeth out upon you, till the whole wounded *Lobe* be spent. You must make way to these wounds by removing the shattered flesh and extraneous bodies and bones: but if they will not come easie away, leave it to nature, lest he die under your hands, and you be thought to hasten his death. Your dressings must be with *Galen's* powder, with Hares Fur, with the white of an Egg to restrain the bleeding, and retain the brain within its bounds, and over them your dressings, as in the wounds of the *Dura Mater*, and over the wound digestives; remembring in all these Gun-shot wounds to cut off the shattered lips of the *Calvaria*, lest a Gleet drop from them upon the *Meninges* and brain, and heighten the inflammation: If the brain be retained within its membranes *Pia & Dura Mater*, and they digest and incarn, then you are to proceed in the rest of the cure as in fractures of the *Cranium*, as hath already been said. Note.

In all hurts of the head what sort soever they be of, the Body is to be emptied, and the rather, if there be *Plethora* or *Cacochymia*; for in such habits of body humors are apt to stir up ill symptoms, especially if the wound be great; therefore you are the first day to open a Vein in the Neck or Arm on the same side, and bleed according to the exigency and strength of body; also cupping with scarification of the Neck and Shoulders, with Fontanels

H 3

under

under the Ears is necessary: Then Lenient medications, such as may evacuate the serous blood, which by reason of its tenuity and heat readily flies to the affected part. These are such as have been proposed in the Fourth Intention of Wounds in General, to which I refer you. In these cases cordial Species and Electuaries, with Juleps and Emulsions may be proper, if they be proportion'd to their temperature, hotter or colder, as there are Fever or other Accidents joyned with the malady. Vulnerary drinks are sometimes in use here, if they be fitted according to the nature of the part, and the ingredients, for these are *Beton. Artemis. Caryophilat. primula veris, Lillium convallium, Salvia: Hypericon, Sanicula, Veronica. Plantag. Flor. Ros. Rubr. Nux Moschat. &c.* as in the Chapter forementioned: Of these you may make drinks with Wine and Water or small-Ale, as *Rx. Sanic. Beton. Veronic. Artemis. an. ℥j. Conf. Ros. Rubr. Caryophilat. an. ℥ss. Torment. ʒij. Coquantur in Aq. Pur. & Vini Rhenani an. ℥ij. Vase clauso in B. M. colentur per manicam Hippocratis;* give ℥iiij. of this morning and evening, or take ℥j. of all these Plants well dried and cut, boil these as you do *Thè*, sweeten it with *Mel.* or *Saccharum* to the palate of your Patient, and give them a dish of it to drink twice or thrice a day, you may Aromatize it with *Saunders. Cassia Lig. or Sassafras, &c.*

## External.

In the External Applications to the part affected, you are in the first place to prevent flux of humors, which is performed by refrigerants & exsiccants, which also dries up what is already extravasated in the part; to which purpose *Hippocrates* proposes *Far. Hordei ʒviij. Ol. Ros. ʒiiij. Coll. in Acet. or Oxyerat.*

*Oxyerat.* and made into a *Cataplasma*; In Winter he added *Flor. Ros. Rubr. Pulv.*  $\text{ʒij.}$  and decocted it in *Vino*, others have since added *Bac. Mirt. Balsauft.* to corroborate the relaxt parts, then they Embrocated the head and about the Jugulars, with *Albumin. Ovor. Acet. & Ol. Ros. &c.* sometimes only with the latter, but without the *Acet.* the *Ol. Ros.* seems to me not to penetrate enough. The want of these Embrocations is sometimes the cause that tumors arise behind the Ears. To contused and great wounds speedy digestion is required, not only in the *Calvaria*, but *Meninges* of the brain, and these ought to be *humectantia & emollientia*; and herein, as I have elsewhere said, *Terebinthina* is the most proper medicament, and in these Nervous parts you may use it washt or not; in dry bodies they add *Thus*, in humid bodies and recent wounds *Vitel. Ovor. & Ol. Ros.* also *Farin. Hord. Cribrat.* others *Terebinth. Venet.*  $\text{ʒjss.}$  *Ol. Hyperic.*  $\text{ʒvj.}$  *Thuris*  $\text{ʒij.}$  *Vitel. Ovi*  $\text{jm.}$  or *R. Resina Abiet.*  $\text{ʒvj.}$  *Vitel. Ovi*; or *R. Terebinth. Lot.* in *aq. Salvia*  $\text{ʒj.}$  *Ol. Ros.*  $\text{ʒjss.}$  *Gum Elemi cum oleo super Ignem dissoluti & colat.*  $\text{ʒss.}$  *Vitel. ovi*  $\text{ʒj.}$  *Croci*  $\text{ʒj.}$  *m.* and if there be much pain a *Cataplasma ex Radic. Althæ, Flor. Meliloti, Farina Hord. Ol. Ros. Vitel. Ovor.* and a little *Crocus*, but you must have a care by your slabby medicaments you cause not putrefaction; wherefore Matter thus made, which happens in three or four days, you are then to deterge by adding *Mel. Ros.* or *Mel. Com.* or this, *R. Terebinth.*  $\text{ʒij.}$  *Mel. Ros.*  $\text{ʒj.}$  *Pul. Myrrha, Aloe, Mastich, an.*  $\text{ʒss. m.}$  Discutients are now required outwardly by *Cataplasmes, Cerots,* and *Emplasters*, as *Empl. Vigonis de Beton. Gum Elemi de Matrisilva, Cerat. Isidis,* or *R. Succ. Beton.*

℥ij. Ol. Ros. ℥iiij. Mastich, Myrtillor. an. ℥j. Pingued. Hirci ℥jss. Coq. ad Succ. consumption. Colat. add Gum Elemi, Tacamahaca an. 3x. Terebinth. ℥ijss. Cera Alb. qf. Iterum Bulliant ad consistent. Cerat. or R̄ Gum Elemi ℥iiij. Opoponac. ℥ij. Bdellii ℥ss. Resina pin. ℥j. Cera qf. Ft. Ceratum. In all wounds of the head Gum Elemi is much commended, it mitigates pain, and corrects the evil temper of the part, by a peculiar vertue it hath thereunto. Fab. ab Aq. Pend. commends this Empl. R. Beton. Virid. m. viij. Contund. Contus. addantur Ol. ℥iiij. Cera, Terebinth. an. ℥j. coquantur, & exprimantur suc. add Beton. virid. Contus. m. viij. Iterum coquantur & exprimantur pro usu.

Spir. Vini  
of what use  
in these  
cases.

The use of Spir. Vin. is much commended in these wounds of the *Meninges*, as having such a siccant quality, as is requisite for them; but in recent wounds where there is fear of pain and inflammation, it is not to be admitted, but amongst deterfives is of great use and proper for the Bones: *Vigo* commends this, R̄. Spir. Vini ℥vj. Myrrha ℥ss. Aloes ℥j. Sarcocol. Thuris an. 3ij. or this Balsam, R̄. Spir. Vini ℥jss. Vin. Malvatici ℥xvj. Myrrha, Thuris an. 3x. Pul. Rad. Consolid. ℥j. Pul. Centaur. Min. ℥jss. Flor. Hyperici Pul. ℥ss. Tereb. ℥ss. set this in Balneo a month, then reserve it for your use, drop of it warm upon the *Meninges*, or mix it with your other medicaments for your use. If the *Dura Mater* have changed his colour, and do not deterge with what is proposed, then this is commended to you, R̄. Tereb. Lot. in Vin. Alb. ℥iiij. Mel. Ros. Spir. Vin. an. ℥j. Myrrha, Aloe, Sacchar. Alb. an. 3ij. m. If there be yet such ill quality in these wounds that they tend to putrefaction,

faction, scarifie the Lips of the wound, and apply this or such like, *R<sup>e</sup> Mithridatii ʒvj. Theriac. venet. ʒij. mel aegyptiac. ʒj. pul. scord. myrrha, an. ʒj. sp. vin. qs.* The putrefaction got off, and the Membrane recovered in its colour, you may then dress with the above mentioned, or you may dress it with this of *Johan. Andr. à cruce, R<sup>e</sup> ol. Terebinth. venet. mel Rosar. p.aq.* apply it warm, all these Medicaments are to be applyed upon a *Sindon* to the Membranes. A *Sindon* is a piece of Silk, or fine Lining cut round proportionable to the perforation made in the *Cranium*, and is to be placed in under the edges of the *Cranium* by the *Lenticular* Instrument, that the edges of the fractured or perforated *Cranium* hurt not the *Dura mater*: A Thread or Silk is to be fastned to it to pull it out at pleasure; over this you are lightly to place soft dossils of Lint dipt in some convenient Medicament, to fill up the void space in the Bone, this serves to cherish the native heat of the part, and to keep the *dura mater* from rising above the Bone, whereby your Patients life would be in great hazard: the Tincture of *Myrrha* forementioned is proper to dip the dossils in after digestion.

In wounds of the membranes of the Brain, and <sup>Medicine</sup> Brain it self, this is good, *R<sup>e</sup> succ. Beton. ʒiiij. succ. in wounds calamenth. ʒij. flor. Centaur. min. p. ʒss. hyperici, con- of the Membringes, tuf. ʒij. vini odoriferi ʒbj.* Infuse these three days, then boyl them to the consumption of the Juices, then strain it, and add to it *Terebinth. clara ʒiiij. Gum. Elemi ʒj. dissol. in sp. vini ʒij. ol. Hyperi. ʒjss. mel. Ros. ʒiiij.* boyl these a little, then add *pul. myrrha, Aloes, Sang. dracon. Thuris an. ʒj.* and reserve it for your use; *oleum Aparici* prescribed in wounds

wounds in general is an excellent good Medicament in recent wounds of the *Meninges* and Brain.

Qu. whether the dose of ol. chalcantib. be not mistaken, at least if by it he mean el. vitriol.

*Fabr. ab Aq. pend.* proposes this in wounds of the Brain, *Rx farina milii*  $\mathfrak{z}$ ss. *olei aparici*  $\mathfrak{z}$ j. *Mithridati*  $\mathfrak{z}$ vj. *Bals. pervan. ex Aegypto*  $\mathfrak{z}$ ijj. *sp. vini*  $\mathfrak{z}$ v. and if more desiccant be required, he adds *olei de chalcanto*  $\mathfrak{z}$ jss. drop this (saies he) warm and your digestives over the wound, and to Embrocate the head and parts about with *ol. Ros.* and lay this Emplaster over all, *far. Hordei*  $\mathfrak{z}$ vijj. *pul. camel.*  $\mathfrak{z}$ iiij. *pul. spica Scenanthi an.*  $\mathfrak{z}$ ij. *pulv. Betton. stachad. an.*  $\mathfrak{z}$ ij. *ol. Mastich.*  $\mathfrak{l}$ ss. *ol. Ros.*  $\mathfrak{z}$ iiij. *oxy mel. simpl.*  $\mathfrak{z}$ v. *vini albi medioc. potentis.*  $\mathfrak{q}$ s. ft.

If the bones be carious and do not readily exfoliate, you are to *Rugine* them and dress them with *ung. Arcei*, and if they do not incarn by that, then *Rx sp. vini*  $\mathfrak{z}$ x. *Myrrha*  $\mathfrak{z}$ j. *Aloes*  $\mathfrak{z}$ jss. *rad. pucedan. Aristoloch. cort. Thuris, an.*  $\mathfrak{z}$ ss. *pulveriz. & misceantur pro usu.* It is to be used with Lint; In dry Bodies this *Rx pul. Aloe pumic. ust. pomphol. an.*  $\mathfrak{z}$ ij. *Myrrha.*  $\mathfrak{z}$ j. *pul. ostre. combust.*  $\mathfrak{z}$ ij. this to be mixt with *mel. Ros. & sp. vini.* And this Emplaster over it, *Rx cera, Resina pini, amoniaci, Elemi, an.*  $\mathfrak{z}$ vj. *Terebinth.*  $\mathfrak{z}$ iiij. *pulv. Myrrha, mastick, Aristoloch. rot. Ireos, Aloes, opoponac. Euphorb. an.*  $\mathfrak{z}$ j. *ol. Ros. q. s. ft. Emplastrum,* after parts are incarned you may cicatrize with one of these or such like, *Rx plumbi usti cum sulphure & loti Litharg. aur. an.*  $\mathfrak{z}$ ij. *Antimonii usti & loti cernissa. an.*  $\mathfrak{z}$ j. *ol. Ros. q. s. ft. ung.* or thus, *Rx pulv. Aristoloch. ust. flor. Ros. rub. Balanst. cupress. ust. ostrearum. an. p. eq. ft. pul.* or thus, *Rx calcis testarum ovor. calcinat.*  $\mathfrak{z}$ ss. *Alum. usti*  $\mathfrak{z}$ j. *croci martis*  $\mathfrak{z}$ j. *ft. pul.* Thus I have

have set you down variety of Medicaments, whereof you may fit your selves according to the exigency, and shall now shew you some of my work, wherein I used but a few.

## Observations of the Wounds of the Head.

A Poor woman near *Ludgate*, coming out of *Chamber* one Night, pulling the door to her by the Key, it slipt out, and she tumbling down stairs, cut and raised up the Hairy Scalp; from the beginning of the *Lambdoides* downwards; I was sent for, and having caused the hair to be clipt and shaved away from about the wound, I cleansed it from the blood, and brought the lips close together by three or four stitches, and held them so, then sprinkling them with some of my agglutinative powders, I applyed a pledget over the Suture, and Embrocated the parts about *cum Alb. ovi, Aceto* with *ol. Rosar.* and adding some of my agglutinative powders with the foresaid mixture, I applyed it over all and rould up her head. I gave her afterwards  $\text{ʒ} \text{iiij.}$  *Aq. Papaveris* with *Syrup. de miconio* and a little *Aq. Cinamom. hordeat.* and left her to rest. The next morning I took off my Bandage and restrictive Emplaster, and Embrocated with *ol. Ros. & Aceto.* and applyed a Cataplasme of *farin. Hordei & fabar.* dedocted in *Oxycrate*, adding *ol. Ros.*

Observ. 1.  
A large wound of the Calvaria.

*Ros.* and took away a little blood by the opening a Vein in her Arm, and prescribed her a Clyster of Milk and Sugar that afternoon: Thus, I continued the *Cataplasma* and renewed it morn, and night; but drest not the Sutures till the third day, and by that time the tumor diminished, and the wound inclined to agglutination. I Embrocated the parts about, and drest up the wound again as before, the next dressing I cut out the stitches, and drest up with my Agglutinative and Sarcotic, with my *Empl. Beton.* over all instead of the *Cataplasma*, and in a few days cured her of that wound by Agglutination.

Observ. 2. Some while after I had a young man my Patient, who by a such like Accident was so wounded on the right *Sinciput*, whom I cured the same manner as above said. It hath often hapned abroad, that upon a fall from their horse, or blow by a Pole Axe or the like, the Patient hath been stunned and did vomit, by which Symptomes I have suspected a Fracture or Fissure, so have presently laid open the *calvaria*, very large by cross or the like Incision, and after the raising up the hairy Scalp, seeing all well, I have laid it presently down again, and by Agglutinatives, and sometimes by Suture with two or three Stitches at a distance to keep the lips of the wound close, have by agglutination cured it in few days, applying refrigerants and exsiccants with bleeding, Clysters, &c. and have happily gotten them off in a little while.

Observ. 3. A Young fellow a servant to a Horse-courser, was cast off his Horse against some of the Bars in *Smithfield*, whereby the *calvaria* or hairy Scalp was  
*Of the Calvaria torn off.*



was torn up from the Coronal Suture to the Temporal Muscle on the left side, the Skull was bared between two and three Inches broad, he was led to the next Barber-Chirurgeons, who cut the piece off, and hang'd it up in his Shop; the next day the poor fellow was brought to me. I caused the hair to be shaved off from about the wound, and dress'd the Bone and Lips with *Linim. Arcei* warm, Embrocated parts about *cum ol. Ros. & Chamemel.* and applyed *Empl. à Rolo.* over the wound, and with compress and bandage rouled up his head. He had been Let blood the day before without consideration of the great quantity which he had lost from his wound. I continued the former dressing to the Lips of the wound and Bone, untill they were digested well, in which time the edges of the Bone Incarned round, the middle of the Bone I *Rugined*, whereby I dispos'd a *callus* to put forth. After digestion I deterged with *mund. Paracels.* and after the *callus* grew up from the Bone, I dress'd the part with pledgets dipt in *ss. vin.* prest them out drie and applied them over the Bone. After deterision I dress'd the wound with one of my *Sarcotics* mentioned in the fourth Chapter of wounds in General, and afterwards by *Epuloticks* as *ung. Tutie,* &c. cicatrized the Lips of the wound even with the *callus*, as it rose from the Bone, and as the Bone sheld off here and there in thin Scales I Cicatrized the wound, and about that time to dispose it the better to do so, he was purged sometimes. Thus he was cured as a wound with loss of Substance, a troublesome and vexatious work to the Patient and Chirurgeon, which might at first have been cured by agglutination or with a less Cicatrice, and have enjoyed its natural tegument with the hair,

hair, whereas now it remain'd Bald & very unseemly.

Observ. 4.  
A great  
contused  
wound.

A Cook-maid, by the fall of a great Jack-weight from its full height without doors upon her head, was beaten down, and stunned for some while by the blow, she vomited and was carried in doors with great pain, there were three wounds to the *Cranium*, the flesh pasht, with a great tumor, the bone seemed to me to be deprest all under and to have a fissure, I presently made a Circular Incision, and raised up that part of the hairy Scalp in Order to Terebration, and fill'd up the wound, and the bone with dossils of dry Lint, shaving the hair from about the wound. I applyed pledgets spread with my digestive upon the Lips of the wound, Embrocated parts about with *ol. Ros. & Aceto, & Empl. è Bolo* over, then with compresses dipt in Oxycrate rouled up her head. Some hours after I caused her to be Let blood about eight ounces, and that night gave her *ʒvj. syr. de meconio*, in a draught of *Aq. Papaver.* with a little *Aq. Cardui.* The next day I took off dressings, and viewing well the bared bone, I found neither depression or fissure, I was deceived by the shape of her head, *viz.* double crowned, the tumor great, and the saggittal Suture running underneath, I fomented the parts affected with *vin. Rubr.* wherein was decocted *stor. ros. rubr. Chamom. fol. Beton. scabiose, sumit. Absinthii, Bacc. Myrtil. &c.* dress'd the bone and Lips, the former with my Unguent *è succis*, and the latter with my digestive *è Terebinth.* dipt in *ol. Hyperici* warm, and having Embrocated her head well with *ol. Ros. & chamom.* I applyed a *Cataplasma farin. bordei, pulv. balanst. & ros. rub.* decocted in Oxycrate with *ol. Ros.* over all with convenient Bandage, this method

method I continued till the wound was digested, and pain mitigated, and the tumor discussed, then I deterged the wound, and continued the former ung. to the Bone, as also to the Lips as a sure *Sarcotick*, and drest over all with one of *Vigo's Cerots* instead of the *Cataplasma*; by this method the bone Incarned, she returning with Medicaments to be drest by some of her fellow servants at her Masters house a few miles off, sometimes coming to me, the Bone and Lips Incarned, I Cicatrized them as in the former Laceration of the *Calvarie*, I did not believe so great a blow could be without a Fracture and great Accidents, otherwise I should not so presently have raised off the hairy Scalp.

A Tradesman returning from visiting some of his friends in the Countrey, near *Knights-bridge*, fell off his horse to the ground bruised and wounded his Forehead and Face, was taken up as dead. After he was a little revived, they put him into a Coach and brought him to his house, they sent for me, I found him in his bed labouring under a Concussion, a Stupor upon his Spirits, not capable of giving any account of his ailment, his Face & Nose much bruised with a wound to the Bone upon the *os cribroformis*, reaching from the upper part of his Nose, to the *os frontis*: I caused the blood and gravel to be washed out of his wound, and with my Knife laid open the wound a little higher up the forehead, viewed the bone and see it without Fissure, I then brought the lips close together, and drest the wound with my agglutinative, with an *Empl. à Bolo* over it and his Face; I then caused the hair to be shaved from the forepart of the head, from the Coronal Suture down to his Ears forward, and Embrocated the

Observ. 5.  
A Concussion.

the parts shaved with *ol. Ros. cum Aceto*, and applied a Cataplasme of *farina Hordei* with *pulv. flor. Ros. rubr. Balaust. & Bacc. Myrtil.* boyled in Oxymell, and by Bandage retained dressings close, then I let him bloud, between Ten and Twelve ounces, a Neighbouring Physician visited him that night, and prescribed him what he thought necessary; he lay dozing all that night, groaning and troubled, and was not better in the morning; he spake not willingly to any of us, nor so as we could understand what he said, that day I took off dressings, viewed and felt the parts about, the left eye was Inflamed, the lid swell'd, and the forehead bruised. I was not able to make out any thing, whereby I might take new Indications, I drest him up again as before, ordering a little breast milk to be dropt warm into his eye, and renewed the Embrocation and Cataplasme, that day he was Let bloud again, and a Clyster given him, and what else his Physician thought necessary, the next day he was not better, old Mr. *Bonne* a Chirurgion was consulted, we took off dressings and considered parts, opened the Lips of the wound again, and viewed the Bone, it was fair without the least Impression, Mr. *B.* did conclude that the wound should be cured without farther enquiry therein, which accordingly was done in few daies after without *exfoliation*. Blistering of his Neck and Shoulders, and Cupping with Scarification was resolved by us, and accordingly performed with Fontinells behind his ears, Fomentations and Emplasters were applied as in Concussions; but the relief was small yet by these, purging, fomentation and Emplasters with otherlike applications, he after a moneth or six weeks was so well as a little to follow his occasions

sions abroad, but was not well : his eye was cured, but after he had followed his affairs some while, of a suddain that eye-lid fell down, and recovered not its strength again, but in some moneths after he lost the sight of that eye, without any outward forenefs, which I imputed to the obstruction from within, it being the effect of his Concussion : He was alive at the time of the Fire, and may be so still for ought I know ; if ought was omitted it was further bleeding.

A Gentleman of about 30 years of Age, coming out of *Hartfordshire* in passing through *Totenham*, rode upon the Causey near an Inn. One emptying a Chamber-pot out at a window, just as he was passing by, his horse started, and rush'd violently between a Sign-post and a Tree which supported it. The poor Gentleman was beaten off his horse by that Tree, and lay stunned on the ground: The people sent Immediately for Mr. *Torner*, a Chirurgeon from *London* ; Sir *T. B.* upon notice of his friends misshap sent me thither also, where I found the Gentleman lying stunned upon the ground, the people and Chirurgeon gazing upon him. I felt his Pulse much oppress'd, the right Brow bruised, I inquired whether they had Let him blood, the Chirurgeon replyed he had opened a Vein in his Arm, but it would not bleed ; I replyed we must make him bleed though it be by slitting his Veins. I turned his head on one side, proposing to open the Jugular Vein on the bruised side. I did so, and he bled freely ; after I had taken about twelve Ounces of blood, the blood run down from his Arm, which was opened before ; we bled him till he came to life. Then he raved, beat us from

Observ. 6.  
Another  
Concussion

I

him,

A great  
Bony Wound.

him; we staid the bleeding by Emplaster and Bandage, and caused the people to carry him into the Inn, and put him into a Bed. All the while they carried him and were making him unready, he roared and was very unruly, especially whilest they were pulling off his Stockings from his right Leg, which inquiring more particularly into, we found broken short in the middle of the Thigh-bone, close by a Bony wen of the bigness of a Tennis-ball; they put him into Bed, and we prepared dressings for setting and reducing the fracture, he opposed us mainly in the Setting and dressing it up, but some of the people holding him down in his Bed, we set and drest his Leg as is said in the Lecture of simple Fractures; but he was no sooner at liberty, than he endeavoured to loose the Bandage which we had put on for keeping the Fractured bones together, and would not be quiet until he had done it. We contented our selves in what we had endeavoured, and from that time left his Leg to lye unset or drest, not so much as an Emplaster over it, and prepared the application for his head, shaving the hair from that side of the Temporal Muscle, and Embrocated the part which seemed to us affected, *cum oleo & Aceto*, and applied a Cataplasma of Bean-meal which was speediest to be had, and with *aceto & mel. & oleo*, and four whole Eggs, which he permitted patiently. That bound on, I left my Brother Chirurgion to stay with him and returned to London: The next day, Sir T. B. sent for Sir Ch. Scarborough, and carried us with him to Tottenham where we found the Patient raving as by their report, he had done all night. We understood not one word he spake, his pulse was now intermit-

intermitting, no Indication for bleeding, what was necessary for him to take the Physician then prescribed, and concluded that there was no Indication to do more at present; his bruise was upon the Temporal Muscle, a part not to be laid open, upon a bare surmise, nor shall I ever allow the laying it open though a Fissure were under it, but content my self, as *Ambr. Par.* did in such like cases, to open above it, and make discharge that way, wherefore we renewed our Embrocations and Cataplasmes, and continued to dress his head daily as hath been said in Concussions: Then we left the Chirurgion to wait upon the Patient; Sir *Ch. Scarborough* was going a journey farther into the Countrey, I to *London*, but with promise to return daily to this Patient while he lived. I did so, and the next day finding the Patient raving as I left him, his pulse troubled and intermitting, I resolved to attempt a doubtfull remedy rather than suffer him so to languish, and that was bleeding him: his distemper proceeding from Inflammation of the Membrains of the Brain, the oppression was certainly there; to which purpose I let him blood from the same Jugular about Ten ounces, and so proceeded every day or second day at least. The Patient bare it well, and seemed to be relieved, his pulse rising upon it, and he slumbring sometimes, and taking his nourishment which before he did not; about the 17 day I coming to him near *Tottenham* met his Chirurgion going to *London*, he told me that if he had met me at the Patients Lodging, we might have set his Leg, he being now more sensible of the Fracture. I perswaded him back, much rejoycing to hear that the Patient was so well; but when I came near his Chamber I heard him hollowing. It troubled

me what to do, I knew his bleeding had much relieved him, but the People as also the Chirurgeon disliked my so often Letting him blood, and did abusively say, Now you shall see this Chirurgeon Let him blood again, and that I would be the death of the Gentleman; however I resolved to Let him blood once more, and no more. This I declared with the necessity of doing it, and accordingly opened the same Vein again, and held a white stone Porringer to receive the blood, which flowed with a sprightly stream, the Patient lying as quietly the while upon his back, I put the Porringer into Mr. *Turners* hand, and seeing the blood flow with much vigour, I catcht up hastily a pewter Porringer, proposing to take a little in that. In bleeding these Veins in the Neck, we usually holding the Porringer close to their Neck it serves us as a Bandage to intercept the descent of the blood. I put this Porringer into my brother Chirurgeons hands, with pretence to make a dressing to lay upon the Vein, but stood at a little distance, looking my Patient in his Face, with a resolution to bleed him until I saw his Countenance change; which I did, and then stept to the Patient to stop the Vein: The while the Porringer was taking away, the blood run out of the Porringer, it having been melted in the side, and the hole so covered by the Sawder as I did not see it before; in the while he was bleeding I thought him long in bleeding, and wondered to see so little quantity gathered from so full a Stream, and now seeing the bed so bloody, it was evident that when the melted hole prest not against his Neck, the blood ran into the bed which deceived me. But the Patient upon the taking a little of his Cordial Julip, refresht his Spirits, I



fat a while by him, and left him pretty hearty. The next day I returned sooner than I used to do, being doubtful how I should find him, but to my wonder, he was perfectly well in his Sences, and discoursed soberly of what passages he remembered in the time of his *delirium*.

We presently prepared now to set this fractured thigh bone, after it had lain 17 daies unset, it was without Inflammation Tumor or pain. The *Callus* I suppose was thrust out at the ends of the bones, and that had covered the Asperity of the fractured ends of them; as the large bleeding and disease had made revulsion and evacuation. We by an easie extension brought the ends of the bone together, and drest it up as I usually do in simple fractures, and in less than twenty daies the *Callus* was dried, and his Leg so strong as to bear him again, and some weeks after he went abroad about his Affairs.

A Youth about Ten years of Age, was struck down by a blow upon the forehead, his Father fetcht me to him, I found him lying upon a bed deprived of his speech with a loss of the use of his legs: I took off the Emplaster which was upon his forehead, there was no wound, nor considerable swelling, but searching with my fingers I felt a depression of the bone, upon which having advertised the Parents of the danger of the child, and the way of my proceedings, I sent for the Chirurgion at next dore, who had applyed the first Emplaster, I desiring to retain him for more constant attendance, shewed him the way of making dressings ready in order to dilatation: Then causing the hair to be shaved, I made an Incision so large as to set on the *Terebra*, if an occasion should be, for the raising up

Observ. 7.  
A Fracture  
with a long  
fissure and  
depression  
of the  
*Cranium*.

the depreſt bone. Upon the raiſing this *Calvaria* upwards toward the Coronal Suture, I eſpied a fiſſure running up from the fractured Bone beyond my firſt Inciſion; wherefore I followed the fiſſure laying it open the whole length near to the Coronal Suture, out of which I ſee a ſerous blood flow in a good quantity, by which I promiſed my ſelf a ſuddain remiſſion of theſe Symptomes which the child laboured under. The depreſſion was a piece of bone as broad as a three pence ſunk in below the firſt Table: I fill'd up the opening with doſſils of dry Lint, and applyed over all my digeſtive, *è Terebinth. vitel. ovi* upon pledgets with *Empl. è Bolo*, and made a Bandage to keep my dreſſings on, after I had Embrocated parts about with *ol. Myrtill. & Roſ. cum Aceto*; The next day in the preſence of Dr. *Barwick* and ſome Countrey Phyſicians with Mr. *Arris* Chirurgon, I took off the dreſſings, and ſet the *Terebra* above the fractured bone for to avoid the great Scar which muſt have been, had I made it below the fracture, beſides that porineſs of the bone below. Here in this wound, I alſo cut that Vein, which in the former diſcourſe I gave you caution to avoid, which could not be here, the fracture being juſt under it, and in ſuch caſes even the Artery it ſelf is not to be ſpared. The *Terebra* ſet on, the bone taken out, and the inner edges ſmoothed by the Lenticular Inſtrument I put in a *Levator*, and raiſed up the depreſt bone even with the reſt: That done I placed in a *Syndon* with a bit of Thread or Silk faſtened to it, firſt dipt in *ol. Roſ.* with a third part *Reſina* warmed, then with a round doſſil dipt in a little Lin. *Arcei*, which fill'd up the opening, out of which the bone was Terebrated. Then I opened the fiſſure with

with my *Rugines*, scraping away its edges that no *sanies* or matter might be detained there to hurt the bone. Then I dressed up the bone with Linement *Arcei* warm, in that long wound which I made to give a breathing to the fissure, keeping it open by a single dossil giving way to the lips to fall in, and digested them with the same Linement: I desiring no more opening than was necessary for discharge of matter from within the *Cranium*, taking care that the fractured bone should not be intangled with lax flesh, lest it become carious. Over these dressings I applyed *Empl. Diacalcith.* malaxt with *ol. Ros. cum Aceto*, and with compress Baudage concluded that second dressing; and from this time, all our threatening Symptomes vanished: Indeed the first opening and Letting blood that same night recovered his Speech, and after this second dressing his Legs became well again, yet we kept him in the dark, and to a slender dyet allowing no flesh. What concerned Internals Dr. *Barwick* took care of, the other Physicians and Chirurgeons coming no more; I continued the same method in my dressing until digestion, which was made in 4 or 5 days, then I added *Mel. Ros.* instead of the Oyl, and afterwards incarned by increasing the *Resina* and lessening the *Mel. Ros.* The flesh rising in little grains presently after the digestion was compleated, after a few days did more cover up the *Dura Mater*; Then I hastened the exfoliation of bones, deterging the wounded lips with *Mund. Paracels.* from this time the work being rather to keep down the lax flesh, than to seek how to make it grow; to which purpose I dressed the *Cranium* with pledgets dipt in *sp. vini*, and the Lips of the wound with *ung. Tutia*, sometimes touching them with my

*Vitr.* and *Allom-stone*, which were of great use, and do hasten the cicatrize with much safety: In less than six weeks the bones were Exfoliated, and the wound ready to cicatrize, at which time I left it to the neighbouring-Chirurgeon; the Patient was cured, and is now a man.

Oblerv. 8.

A contused wound by a blow on the crown of the head.

A person wounded near the *Vertex* by a blow, sent for a Chirurgeon, who dress'd his wound, the Patient going daily abroad kept ill hours, without any Consideration had of his wound, whether it was dress'd or not. After seventeen days towards the full moon, coming from abroad home one morning, he felt his legs falter, and before he was got up stairs into his chamber his tongue failed him, his friends and servants put him into a bed and sent for me. They declared to me how he was wounded so many days since, and how he was seized with a *Paralisis* of his legs and tongue. I saw a necessity of laying open the hairy scalp, for the setting on a *Terebra*, I offered to go away that I might send for some of my servants to help me: He apprehending that I was leaving him as deplorable, catcht hold of me, would have spoke but could not: he made signs for pen, ink and paper, he endeavour'd to write but could not form one letter, he threw himself down in his bed, breathing out *yes*. I pray'd his patience, telling him I would return suddenly: but before I went I let him blood ten ounces, then hastened away, and returned again within an hour, and found that he had lost the use of his Arms. I consider'd the wound, and concluding a necessity of setting on a *Terebra*, and thereto having caused his head to be shaved, I made a circular Incision about

about the wound, and rais'd up the *Calvaria* with my *Spatula*, bringing the *Pericranium* smooth off. I both saw and felt the bone, but could discover no fault in it, with Spunges dipt in *Aceto* I dried up the blood, and raised up with my *Spatula* the edges round from the bone, and with a fresh Sponge dried up the blood, and lookt again under them, but could discover nothing ill in the bared *Cranium*. I fill'd up the wound with dossils of dry Lint with my digestive over the lips, and Embrocated the parts about with *Ol. Ros.* and an Emplaster over the wound, and a Cataplasme *è Farin. Hordei, Flor. Ros. Rubr. Balaust. in Vino Rubro*, with *Syrup. de Ros. Sic. & Ol. Chamomell.* and bound it up. That day Sir *Fr. Pr.* gave him a Visit, and prescribed him a Clyster, with Cordials, Juleps, and what else he thought necessary. The next day was full Moon, at which time the brain is thought to rise high, and the Vessels turgid; wherefore I deferred the setting on the *Terebra*, contenting my self with the letting him blood again. All this while he was in a Fever, and deprived of speech and limbs; the next morning about ten or eleven of the clock in the presence of Sir *Fr. Pr.* Serj. *Pyle*, Mr. *Arris* and Mr. *R.* who thought himself concerned for his servant who had first dress'd him, I took off dressings and lookt into the wound: we found no fissure, however there was a necessity of the *Terebra*. Wherefore without delay I proceeded, and in order to it covered the lips of the wound with a fine Lawn dipt in Oil of Roses, & began to work with that Instrument commonly called a *Trepan*, wch I much prefer, it being an Instrument that suffers you to turn lightly, and cut equally or how you please, without shaking or pressing so hard

hard on the head : In the performing this or any operation amongst our brethren the standers-by are very apt to be teaching, one cries not so fast, the other thinks you move too slow, but of these I took no notice but proceeded, and brought out the bone, taking out the pin, when I came to the first table. You shall perceive your self to be entring it, when you see the raspings change, or begin to be bloudish, from that time proceed very gently, and take out the head of the *Trepan* often, and cleanse it by a brush : The Bone out, I lookt into the part, and see the *Dura Mater* of its natural colour without Matter or Bloud, I drest it up with a *Sindon* dipt in *Ol. Ros.* with a little *Resina* dissolved and warm ; this way of dressing was objected against by Mr. R. as I expected. I smil'd and drest it up with it, and assured the Person that I would cure this Patient without applying any other remedy to the *Dura Mater* than these two simple medicaments : But withal was much unsatisfied in my self, that such grievous symptoms as loss of speech and limbs with a Fever should afflict the Patient, and yet no deprest bone or fissure, nor ought of Matter or *Sanies* appear upon the *Dura Mater* ; this troubled me much, fearing some other place, or that the bloud lay putrified under the *Dura Mater*. But I drest up with a soft round dossil dipt in the same medicament, and placed it in next the *Sindon* lightly, and drest the bone with linement *Arcei*, and continued the digestion to the lips of the wound, and my *Empl. de Beton. Mag.* over all, I placed him down in his bed. Going presently out of this close room, where I was crouded up with great lights burning near me, into the fresh Air, I burst out with a violent coughing of bloud, but the

next

next day drest the Patient again, and found his speech and limbs restored, but he was hot, and his pulse quick : I opened his wound and found all well, as I could expect : I drest him up again as before with the same, and after I had bound him up, as is usual in these cases, I let him blood ten ounces, and gave order to repeat his Clysters, &c. From the first opening there came no more any of the Chirurgeons ; I retained the Chirurgeon that had first drest him in his little wound, he dwelling near the Patient. After three or four days dressings these wounds digested, and all symptoms went off well : I then lessened the quantity of the *Ol. Ros.* and increased the *Resina*, and made good my word in curing him with these simple medicaments. I derterg'd and incarned as firm and speedily by this, as any *Sarcotick* I ever used, and as the bones cast off proceeded to cicatrize, as in the former Patient, dressing the lips of the wound with my *Basil. Vigon.* adding a little *Merc. Precipit.* to it ; coming one day after the Exfoliation of the bone my Patient was abroad, so from that time I left him to his neighbour-Chirurgeon to dress, but see him twice or thrice after at times, and drest him then again ; he was well cured, and remained well, and is yet so.

I was call'd to consult with Dr. *T. C.* one of the Kings Physicians, in a Gentlewoman who labour'd under a great pain between the Coronal and Saggittal suture, from a blow she had many months before received riding under a Penthouse. The blow stunded her, she was brought to *London*, was viewed by some Chirurgeons of the City, who cured her wound, it being small, but from that time

Observ. 9.  
A Concussion of the Brain.

time her pain was excessive, and now we were to consider what to do: Her pain seemed to arise from that blow, and we suppose the extravasated and putrified blood caused this pain, with a *Vertigo*; we considered the pained part, as she toucht it with her fingers (the scalp was swelled thick) and proposed the laying open that part, which we thought necessary, but she would not consent to it: Other things were then proposed as Fomentations and Cataplasmes discutient, blistering, cupping, bleeding, purging, and such like, all which she submitted to, but without success. She then at last yielded to the making a *Fontanel* in this part affected by a *Causick*, which I did, and by Dr. C. consent I made it to the bone, and so large as that I might afterward set on a *Terebra*; upon the cutting out the *Escar* there was neither fracture nor fissure; we rubb'd the part with Ink, and rubb'd it out again, no mark remained; I *Rugined* the bone, but all was smooth, I put some *Pul. Aloes, Myrrha*, and *Mastich* upon the bone, and drest the *Escar* with *Basilicon. Simpl. cum Ol. Terebinth.* to hasten digestion and separation of the *Escar*, and in few days it separated, but her pain still increased, with other indispositions which threatned her life, if something more were not done. Much unwillingly she heard of the opening this bone, but at last it was referred to old Mr. *Arris*, he is call'd in and approves of it, the thing is resolved upon, we met, I opened it with a *Terebra*, and find the *Dura Mater* of its natural colour, but a scent from within, as in corrupt wounds of the brain; I drest it up with Lenients as the former, *viz. Ol. Ros.* and a little *Resina*: Her pains still increased, she kept her bed, her pulse was all a-long weak and troubled;



I drest her again : Next day I find her wound digest which I wondered at, considering what ill symptoms she laboured under.

The third day I drest her again, and in the opening I find good digestion a beginning to incarn, a little red flesh sprouting up out of the *Dura Mater*.

The next day it was increased, and so the next : but then when I opened the next dressing after, I find the *Calvaria* sunk, the lips flat and little Matter, but it was of good colour, the *Dura Mater* did seem no better, the little ruddy flesh was not increased, began to change the colour and look palish, I then left off the *Ol. Ros.* and added *Mel. Ros.* to the *Resina*, with a little *Pulv. Myrrha*, and a little *Ol. Terebinth.* and drest the lips with my *Basilicon. Mag. Vig.* with precipitate and *Ol. Terebinth.* warm, laying over the bared *Cranium* lint dipt in a tincture of *Myrrha*, *Aloes*, *Rad. Aristoloch. Rot. Ireos*, mixt with a little *Extract. Scordii & Empl. Melilot.* with a good compress out of a *Lixivium*, wherein was boiled some of the greater Cephalicks, as *Flor. Anth. Beton. Magerana, Origan*, &c. But that night she was seized with Convulsions and a *Sopor*, and the day after the lips of the wound were without heat, & the flesh upon the *Dura Mater* altered, and no hopes left. She dying within a day or two after, we would fain have opened her head, but she had forbid it in her life : I turned her head downward the next day, there did run from her nose a purulent Matter of a brown colour, with the same scent that was when I opened her skull : I do believe this putrifaction was from the corrupt blood extravasated between the *Pia* and *Dura Mater*, and at first by large bleeding and proper applications might have been relieved,  
and

and if here we had timely opened the *Dura Mater*, this Matter would have there discharged itself; But this tender sex does not admit of that part of Chirurgery which consists in opening the skull or cutting their flesh, unless it be too late.

Observ.<sup>10</sup>.  
A large  
Fissure, the  
*Dura Ma-*  
*ter* putri-  
ed.

A little Girl was brought to me with a swelling upon the left *Sinciput*, the breadth of about two fingers off the Temporal Muscle, about the bigness and shape of half a great French Walnut, and behind the Ear a little swelling: This greater swelling hapned from a fall down a pair of Stairs some weeks before, but whether through ignorance or negligence the fracture was not suspected by them, though there was visible symptoms of a fracture or fissure, as vomiting oft, and great indispositions, with pains, &c. The Child even languisht with it: I acquainted the Mother with the deplorable condition of her Child, and that the only way to relieve her was by opening that tumor wide, and afterward I believed there must be as much done to the Skull, that I feared through the not timely doing this, her child would now die. She prayed my help, and submitted to what I should propose; this tumor was soft, and without doubt replete with a *Sanies*, and the bones underneath fractured or fissured: The way had been in a stronger body to have cut this tumor round, and raised it off from the Skull, and so have made present way to the bone; but the Child was so weak, as I feared it might die under my hands, or if it did live, yet if after such a bloody work, if the Child should not be cured, the Mother would never forget my cruelty, (as she would call it) Wherefore in such cases I use to work in a more calm manner with that sex, and

and do that by an Emplaster, which in others we do with a Knife : To which purpose I applied my Ung. *Catheret.* and with an Emplaster over it, the Mother bound up her Childs head, and carried it home : And about two hours after I call'd to see the Child, and found it had been very easie, these parts being of an obtuse sense, and the less sensible for that the skin was distended by the Matter ; I took off the *Empl.* and found it had workt well, I opened it, and discharged about three or four spoonful of a filthy *Sanies* ; I took off this Caustick the sooner here, suspecting lest it should by longer lying penetrate through, and by its salts offend the parts within : Upon dividing this *Escar* the bone was seen bare, and by a Probe I felt it to the whole length ; upon which I cut it open, and afterward a-thwart over, and then by turning the *Escar* aside, I see a long fissure the whole length of the Tumor, running transverse over from the Temporal Muscle backward, the Skull very thin, yielding to the least pressure of my finger, as a piece of Vellum, so as I might have enlarged it with my Knife if I had thought it necessary. I laid the Childs head upon one side and dropt in a little *Mel. Ros.* with a little of my Tincture of *Myrrhe, Aloes, &c.* as prescribed in this Treatise, and with Pledgits dipt in the same, lightly covered up the same bone, and with Pledgits dipt in *Basilicon.* with a little *Ol. Lilior.* and a little *Ol. Terebinth.* drest up the *Escar*, and laid a Cephalick Emplaster over all, and bound up her head, and thus drest her daily, sprinkling my Cephalick powder upon the bone for the space of many days. I see pieces of the *Dura Mater* purge out, and hang in the fissure, and for some while a thin *Ichor* came out of the fissure ; the *Escar* separated,

rated, I drest the lips with *Mund. Paracels.* and the bone with my linement *Arcei*, dropping into the fissure the Balsam prescribed for these wounds by *Vigo*, pag. 105. Thus I proceeded, and happily cured this Child: The Tumor behind the Ear and part about I Embrocated with *Ol. Ros.* warm daily, by which that Tumor went off, it arising from this of the fissure; but about a year after this Child grew lame of her left Leg, and was strumeous: How I proceeded in this you may read in the Treatise of that disease, she being the product of a diseased Mother.

Observ. 11.  
A *Caries*  
through  
the *Crani-*  
*um*, where-  
in the *Pe-*  
*tricanium*  
and *Dura*  
*Mater* be-  
come one  
body.

A Gentlewoman falls with her little Daughter, a Child of half a year old in her Arms, the Mother is hurt, and the Child a little scratcht on the left side of her head; it's viewed by a pretender to skill in such things, and slighted as inconsiderable; but from that time the Child grew indisposed and vomited often, especially after the receiving its sustenance, & as it grew able to speak complained of a pain in her head, and through her often vomiting she languisht: After Ten years a small Tumor appeared in that part of the head where it had been hurt by the fall so many years before: They now again consult and bring the Child to me, a very starveling; I viewed the tumor and felt in it a pulsation, which at first I thought an *Aneurisma*, but pressing my finger more into it, I felt the brain without any skull, the breadth of an old English shilling: This at first a little amused me, but upon consideration of the fall and symptoms succeeding, it was evident to me, that by the fall the skull was fissured; and being of a thin Cartilaginous substance at that time of her infancy, had been by length  
of

of time mouldred away, and from that Erosion the *Dura Mater* inflamed, and thrust out from within; and by adhesion to the *Pericranium* had become one body; It is usual for parts inflamed to adhere to the next adjacent part: This I supposed the case: The presage here was a sudden death if the cure was not attempted, and in the attempting it she was in great danger: To begin this by a Circular Incision from the compass of the skull, was not difficult; but then to separate these two membranes, the *Dura Mater* from the *Pericranium*, or this from that (they being become one body) was a difficult work even in a dead body, here in a weak Child much more, where the blood would be apt to blind me, and the impatiency of the Child would make it hazardous; this work requiring a steadiness: Then I consider'd of a Caustick, and having predicted the danger either in leaving it to die by its malady after a few weeks, which was certain, or in attempting the cure doubtfully, I referred it to them: They had consulted before, and were not ignorant of the danger the Child was in by its disease; Therefore they readily put the care of managing this great work to me, and lodged it near me, in *Suffolk*-buildings: I presently caused the hair to be shaved off from about the grieved part, applied the most gentle Caustick I could propose; and at such time as I thought it might have made its way in the *Superficies* of the *Calvaria*, I took it off, and with a Caustick-stone rubb'd into the Musculous part of it; then I wash'd out the salts well with Wine first, then Milk, after that with warm Oil, then with a Knife I cut into the *Eschar*, and Embrocated the part warm, and dress'd it up with *Ung. Basilic.* with *Ol. Ros.* and applied my Empla-

ster over all, and roul'd up the part with good Compress and Bandage: that night she was seized with a fit of Convulsions, Vomited, and was very ill; Dr. *Fisher* was sent for, he prescribed her a Cordial-Julep, proper in that her case, and relieved her: The next morning I took off dressings to look upon the part, and raised up the hairy scalp round from the skull through my *Eschar*, which gave the wound a breathing, and discharged a little *Ichor*; from this time her vomiting ceased, she had no more Convulsive fits, she began to be more lively than in Ten years before: We kept her in bed warm and close, with a slender diet, allowing her only Spoon-meats: Her Physician took care in what concerned her health by Internals: I proceeded to hasten digestion, and by Fomentation and the like to cherish the native heat of the part, and as the *Calvaria* separated, so I endeavoured digestion sometime, otherwhile deterfion interchangably; as the one medicine corrupted, so the other deterg'd: It was a nice work to separate the *Pericranium* from the *Dura Mater*, but I happily effected it, while the latter slough was separating, the *Callus* rising up in the mean time: The Patient being free of all the former ill symptoms, and brisk, and in a sure way of recovery. I invited Sir *Charles Scarborough* and Dr. *Walter Needham*, who did me the honour to see her. It was a rare case, not mentioned by any Author, nor scarce to be seen again: Since that time the bone Exfoliated, the *Dura Mater* incarned, and the wound cicatrized and contracted to a very narrow compass. The Child returned to her friends perfectly in health, is a witty Girl, but it's doubted she will be but a dwarf.

## *An Additional discourse of Wounds of the Brain.*

**T**HE greater symptoms that are usually said to attend the Wounds of the Brain, do shew themselves more uncertainly than a speculative Chirurgeon would imagine. And in Cuts or Wounds made by sharp weapons, or sudden strong force more uncertainly than in Contusions, Concussions, & Depressions of the Skull. The highest of them, *viz.* Vomiting, *Stupor*, loss of speech, with a *Paralysis* of Legs and Arms arising more suddenly in these latter cases, than in the former. These symptoms have appeared in one of the forementioned Observations, where there was nothing of fissure or extravasated blood seen upon the *Dura Mater*, after the Trepanation or Perforation of the *Cranium*. Nay, we see many die suddenly from a box of the Ear, and from small blows or wounds: In some upon opening the *Cranium* there is much blood extravasated, in others none at all, or ought else that may be thought to have kill'd the Patient.

Uncertain-  
ty of symp-  
toms in  
Wounds of  
the Brain.

A Young man from a blow with a Cudgil upon the forehead, presently takes his bed, becomes delirious, a *Sopor* follows, and after some days he dieth. I am sent for to see his head opened; in laying open the forehead, I see a small hair-like fissure, running from the great *Canthus* of the eye upward: we took off the skull and *Dura Mater*, and found but little blood extravasated, the *Pia Mater* as little

altered : Others I have been call'd to see opened, where there had preceded only a contusion of the *Calvaria*, without fissure or extravasated blood, more than is usually seen in every opening, or taking off the *Cranium* : yet the Patient lay, as I am informed, under all those symptoms of *Delirium*, *Coma*, &c.

Observation.

Then again I have dress'd many that have been cut through the Skull, the shivers of bones and part flesh, and hair lying upon the *Dura Mater*, yet the Patient without any symptom of such a wound ; some whereof you have read of in this preceding Discourse, some other I shall instance. At *Sterling* Mr. *John Chace* was present, when a poor Servant-maid came to me to be dress'd of a wound she had received on her head by a Musquet-shot, in the taking of *Calander-house* by the enemy ; there was a fracture with a depression of the Skull : I set on a *Trepan* for the elevation of the depressed bone, and for discharge of the *Sanies* : She had laboured under this fracture at least a week before she came to me ; yet had none of those symptoms afore-mentioned, but after perforation, and raising up this depressed bone, and dressing the wound, she went her way, and came daily thither to be dress'd, as if it were only a simple Gun-shot wound of the hairy scalp : Mr. *Penycuik* an eminent Chirurgeon of that Nation did assist me in this work ; I think the Brain itself was wounded : I left it in his hands, who I suppose finished the cure.

At the beating up of some of our out-guards near *Truro*, the enemy pursuing them, a Trooper wounded between the Right Brow and Ear, on the *Sinciput* ; espying me amongst the flying croud, importuned me earnestly to dress him ; he would admit



admit of no excuse, we stopt at an Apothecaries house on the right hand, going out of the Town towards *Perrin*. I call'd to the Apothecaries servant to bring something to dress him, in the while hastily I lifted up the bloudy hair, and see a quantity of the Brain lye among it, I took it up with my fingers, and shewed it him, the sight whereof calmed his passion, whereby I had liberty to fly from the Enemy who was entred the Town. Here the Prognostick was certain, yet none of those cruel Symptoms which accompany Concussions or lesser fissures.

Observation.

From Battails and Sieges of Towns and Garisons, we meet with many such wounds; in them we hasten our way to the Extraction of the Extraneous bodies, by cutting off the shattered *calvaria* first, then pulling out what ever was carried within the *Cranium*; if this be well performed, we then dress up the Brain and Membranes with a *Sindon* of Silk or soft linnen, of a bigness proportionable to the wound; this is dipt in a warm digestive, such as is proper for the wounded Membranes, for however Chirurgeons have proposed to dress the Brain with one kind of Medicaments, and the Membranes with another, that is not possible to be so done, but that the Membranes or *Meninges* will be washt with the same Medicaments, and if they be offended by that Acrimony, Inflammation, Fever, Delirium and death will the speedier follow: In the Cure of these wounds of the Brain, I do consider the Brain as an Insensible body, and that their cure consists in keeping it within its Membranes, and dressing them as wounds of the Membranes with Lenients, &c. if this can be done, as in small wounds of the Brain it doth sometimes happen, (and the better if the fracture of the Skull hath not been very large,) then the Patient may recover.

Manner of dressing the Brain.

But

But if the fracture in the Skull be large, and the wound in the Brain proportionable, that the Brain cannot be contained within, then it corrupts by the external cold, and gets between the *Meninges*, and offends them by its putrid Acrimony, whence Convulsions, Palsies, and other ill accidents follow, and death. They sometimes live until that *Lobe* be consumed, or hath wrought it self forth; as for Instance,

Observation.

At the Siege of *Mellcome Regis*, a foot-souldier of Lieut. Coll. *Ballards* by the grazing of a Canon-shot, had the fore-part of his head carried off, and the Skull fractured into many pieces, driving some of it with the hairy Scalp into the Brain: The man fell down as dead, but after a while moved, and an hour or two after his fellow Souldiers seeing him endeavour to rise, fetcht me to him. I pull'd out the pieces of bones, and lacerated flesh from amongst the brain, in which they were intangled, and dress'd him up with soft folded linnen dipt in a Cephalick Balsam, with *Empl.* and Bandage bound him up, supposing I should never dress him any more. Yet he lived 17. days; and the 15. day walkt from that great corner Fort over against *Portland* to the Bridg, which separates *Waymouth* from *Mellcome Regis*, only led by the hand of some one of his fellow Souldiers; the second day after he fell into a *Spasmus* and dyed, howling like a dog, as most of those do who have been so wounded.

N. B.

About the same time a maid servant was shot into the right side of the *Sinciput* by a Musket bullet deep into the Brain, she lived as long, viz. until the *Lobe* of the Brain was wrought out or corrupted.

At the Seige of *Taunton* one of Coll. *John Arundell's* men in Storming the Work was shot in the face by Case-shot,

shot, he fell down as dead, and in their retreat was carried off amongst the dead, and laid into an empty house by the way until the next day, when in the Morning early the Coll. marching by that house, heard a knocking within against the door, some of the Officers desiring to know who it was, lookt in, and saw this man standing by the door without Eye, Face, Nose or Mouth : The Coll sent to me, (nty quarters being nearest) to dress the man, I went, but was somewhat troubled where to begin; The door consisted of two hatches, the uppermost was open, and the man stood leaning upon the other part of the door which was shut, his Face with the Eyes, Nose, Mouth, and forepart of the Jaws, with the Chin was shot away, and the remaining parts of them driven in : one part of the Jaw hung down by his Throat, and the other part pasht into his Throat; I see the Brain working out from under the lacerated Scalp from both brows, I could not see any advantage he could have by dressing, to have cut away the lacerated parts here, had been to expose the Brain to the Air; But I helpt him to clear his throat, where was remaining the root of his tongue : he seemed to approve of my Endeavours, and implored my Art by the signs he made with his hands. I askt him if he would drink, and proposed a sign by the holding up a finger, which he presently held up and immediately both his hands expressing his thirst, a Soldier fetcht some milk, &c brought a little wooden dish to pour some of it down his throat, but part of it run down on both sides; he made signs to have the dish in both his hands, they gave it him full of milk, he held the root of his tongue down with the one hand, and with the other poured it down his throat, (carrying his head backward) better than I had done, and so poured down more than a quart; After that I bound his wounds up, the dead were removed from thence to their graves, and fresh straw fetcht for him to lie upon, with an old Blanket to cover him, it was in the Summer; there we left that deplorable Creature to lodge, and while we continued there which was about 6 or 7 dayes, all that while he was left by some of the Chirurgeons

surgeons with a fomentation made with our Vulnerary decoctions, with a little Brandy-wine in it, then with *Stupes* dipt in our common Suppurative we bound him up.

I could tell you of many wounded into the Brain, but do think these may serve to prove what I would declare of them, *viz.* that the Brain is of it self insensible, that those Symptomes which accompany these wounds proceed from the pain which the *Meninges, Dura* and *Pia Mater* suffer: which if oppressed by extravasated blood, or a depression of the Skull, do quickly suffer the greatest Symptomes, as Vomiting, *Stupor, Paralysis*, &c. much more if they be pricked by any spill of a Bone, or other Extraneous sharp body. When the Brain it self ouzeth out between them in the manner already mentioned, it is a mild soft substance and lenient to them, so that the accidents appear not till that begins to corrupt between them, and with it the Membranes themselves putrifie, upon which their follows Convulsions, Howlings, and a suddain dispatch of the Patient. From which very Observation, may be seen the folly of dressing these wounds with powerful desiccatives, which so far as I could observe, did hurt the Membranes, but never either digest or Incarn the Brain. According to *Hip. non Coalescet*, but as it gets liberty, works it self forth like unto Barme, and as I have said corrupts, and the *Meninges* suffering from that putrefaction, *Spasmus* follows, and the Patient dies; At Sea these Patients wounded in the Brain died presently, we having no conveniency of lodging them, or dressing them so warm as they require. In the wars my Employment did not permit me to see the finishing of their Cures, and here in my Practice in and about the City, I never was called unto any such wounds, therefore must leave that to others to treat off: But by what I have seen from them heretofore, their Cure consists in dressing them, as in wounds of the *Dura Mater*, and in keeping the Brain within its membranes, without which no Incarnation can be made on the Membranes.



O F

# Gun-shot-wounds.

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## PART II.

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### CHAP. I.

#### *Of Gun-shot in General.*

**G**REAT hath been the Contention amongst the Learned about fire and venome in Gun-shot-wounds; some maintaining the one, some the other to be in them; and others defending, that there is neither. That which I suppose might be the occasion of their suspecting *Empyreuma*, and a *Venesick* quality, was the deadly colour of these Wounds; which in those early dayes, when the Invention of Guns was novel, surprized them; they

Gun-shot wounds, whether fiery or venomous.

B being

## Of Gun-shot-wounds.

being not unlike poysoned and burnt Wounds. Where the Bullet pierceth, it extinguisheth the natural heat, and the lips of the Wound are livid, or blackish, and if not drest rationally, it inflames round about, from the afflux of humours, and hath *ulcuscula*, with a foetid smell.

In this condition the Wound is the first day, and so to the seventh, and (if not succoured) it Gangreens, and so the Patient commonly dyes. If in those dayes the Learned thus deceived by their aspect, drest them as venomous Wounds, it will be no marvel that they should write so of them: I verily believing, that in their way of treating them, they were directly as poysoned Wounds, difficult to digest and cure.

In these our times, although they do not call them venomous, yet it is the hardest thing in the world to dissuade many of our Chirurgions from dressing these Wounds with Tinctures of Myrrhe, and Honey of Roses, and thrusting in of great Tents, by which way of dressing, I have seen these Wounds, undigested the tenth day, one whereof was in the Cheek, with dry and flaggy lips. These lesser fleshy wounds, being undigested, at last Gangreen; and in truth it is not to be wondered at. I will undertake to shew you the Experiment every day; and that in a Fontanel or Issue, made by a Caustick.

Cut you through this livid or black *Escar*, and put a Pea in the middle of it, with Tincture of Myrrhe and Honey of Roses, as I have seen some of them dress Gun-shot-wounds,

Errors in  
dressing  
Gun-shot-  
wounds.

wounds, and the next day, or two dayes after, when you dress it again, it will be to your sight not unlike a Gun-shot-wound; continue your dressing it with a Pea, and with your Tincture of Myrrhe, and if it do not Gangreen, yet it will be Inflamed, and slow in digestion. And this is from the improper application in the dressing it. For if you dress this *Escar* in the Fontanel, with Emollients and Digestives, as you ought to do the *Escars* in Fontanels, the *Escar* will separate with digestion, in the worst habit of Body. And so it will in Gun-shot-wounds, with little distemper or difficulty, if you have timely extracted the extraneous Bodies. But a discontinuance in this kind of Chirurgery, makes us apt to forget our selves,

Thus at our entring into *Worcester*, when the King came out of *Scotland* with an Army of that valliant People, a Townsman was shot. A Pistol fired by the Cheek, shot him through his lower Jaw and Tongue, and out by the contrary Cheek, the Chirurgion of the Town a good Chirurgion, upon sight of it, concluded it Gangreened from the black colour, and declined the dressing it the way he rationally ought; upon which the part grows exceedingly painful, and inflames and Gleet with great tumefaction. After two dayes, I am called in, and by lenient Medicaments and good Bandage, keeping up the fractured Jaw, allaid the pain and digested the Wound, leaving it in the same Chirurgeons hands, who cured it. In this person, the Wound was burnt by the flame, the very powder stick-

Observation.

ing in some parts of the Cheek. This, with the putrefaction from the hot weather, contributed to our Brother Chirurgeons apprehension. It is this ugly aspect that puts the inconsiderate Chirurgeon out of his Method, and so makes Gun-shot more difficult of cure, which otherwise would digest, and heal as easily, as any complicated Wound, as I shall make appear in this following Discourse.

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## CHAP. II.

### *Cure of Gun-shot-wounds; and First of Extraction of Bul- lets, &c.*

**W**ounds made by Gun-shot are, *Implicatissimum morbi Genu*; The most complicate sort of Wounds that can be inflicted. For they are not onely a solution of continuity, but have joyned to that contusion, Attrition and Dilaceration in a high and vehement kind. To this we may add all sorts of Fractures and Accidents, as *Hemorrhage, Inflammation, Erysipelas, Gangreen* and *Sphacelus*; besides the extraneous Bodies, which are violently carried into the Wound. And multiply Indications *ex compositionis*,



*ria, affectibus, non unica elicitur Indicatio; sed plures pro diversitate morborum.* The number of the Indications in compound, affecti- ons, must answer to the variety of disturbances, were it a simple Wound, the cure of it would presently be performed (as you have read in the preceeding Treatise of Simple Wounds) *per Astringentia & exsiccantia*, by such Medicaments as are of an astringent and drying quality: The cure of a Wound is the exsiccation of it; but here is always joyned with these that which Indicateth the use of *Emollientia, digestiva, & suppurantia*, according to that of Hippocrates, *Omne quod contusum est, necesse est ut putrescat, & in pus vertatur*; What is contused must necessarily putrifie, and be turned into matter.

Compound intentions.

That which is fretted and torn must also be reduced to the whole, or cut off, before your ordinary intentions of Incarning. Moreover, in these Wounds, not onely the Bullet it self is ordinarily lodged; but many times other strange Bodies are carried along with it. For extraction of which, judicious care and industry are required in you; Here in these recent Wounds, we very rarely have a flux of blood, though the Veins and Arteries be wounded; they commonly lie quiet in the contused flesh, until separation of the *Escar*, and about that time when you least think on it, they may burst out violently. I have seen it thus often break forth; but if such Vessels do bleed upon the receipt of the Wound, and interrupt you in drawing out

What is torn is to be reduced to the part, or cut off.

Hæmorrhagy.

Observation.

the Extraneous Bodies, you must endeavour to suppress the blood, for thereupon depends the Life of your Patient. But withall so proceed, that you may extract the Bullet first, and then be careful that in the restraining the bleeding, by your crowding in Dossils, and strict Bandage, you bring not on a Mortification. Such a *Hemorrhage* happened to a Souldier at the surprize of *Weymouth*, by the Garrison of *Portland*; he was shot through the Heel; for the restraining of bleeding, I applyed my endeavours. But after all, I was put to the use of the actual Caustery, which I did successfully, and have since seen *Borallus* authority for it: *Tu-rius enim est* (saith he) *eam Igneo ferro constrin-*

Anodynes

*gere*. Pains are here to be appeased by *Anodynes*, but you must well consider the application, lest you extinguish that small remainder of heat that is left. How you shall deal with all these Inconveniencies, and not add one evil to another, I shall plainly deliver to you. And first, what must be first put in execution, which is the extracting of Bullets and other Extraneous Bodies.

Dress presently, during the heat of Battle.

The Part is at first dressing, with what diligence you can, to be cleared of all such Forraign Bodies, as have made violent Intrusion into it, while the Patient is warm with the heat of Battle, and the Wound fresh, and very little altered, by either Air or Accidents, so that less pain must necessarily follow upon the Extraction.

In the *Armada Naval de Dunquerque*, where we Chirurgeons were oft employed in this Service,

vice, we after every fight went together, visiting one anothers wounded men: Amongst us it was thought a great shame if any thing of this work of Extraction were then to be done. For after the first and second day the Wound proveth tumefied, all the neighbouring parts are inflamed and changed so in their temper, that they conceal from your sight both the Bullet and his Companions, that the place they are coucht in can hardly be known; or being discovered, you cannot without hazard of your Patient, or great trouble of the Part, make extraction of them.

Necessity  
of it.

And yet if the Wound be near a Joynt, or the Shot lodged amongst the *Tendons*, it is much to be feared the pain will not off, until those strange Bodies be drawn out; consequently the omission of that extraction, will bring Mortification, which hath been the cause of the death of many a brave Souldier. And is the cause of all the mischief these Wounds are subject to, as *Pain, Inflammation, Spasmes, Convulsions, Gangreens, Sphacelus*, what not? Every Battel produces Instances of it to the discredit of our Profession.

But if the Bullet be lodged in a less noble Part, as in Musculous Flesh, you may with more ease content your self, unto the seventh day, or until the fierceness of the Accidents be over, and the Wound digested. But withal, it will require more care, for the Wound will be more painful, and slow in digestion then otherwise it would be; yet by the confession of those that allow fire and poyson in it, the Bullet may ly long there,

and do little harm ; nay, I suppose there are not many, but have heard or seen of Bullets that vvithout grievance to the Patient have continued, lying long in fleshy parts of wounded men. Conceive this spoken of Lead-en Bullets, for Iron or Brass cannot (by reason of their aptness to rust) remain vvithout doing harm ; however let nothing of this encourage you ; for the Bullet pierceth not any part, vvithout carrying raggs along vvith it, vvhich corrupts in the Wound, and makes Apostemations and prolongs the Cure, as must needs be observed by all men in their practice.

Observation.

The Servant of a Noble man, was wounded and shot in the thigh by High-way men, the Bullet not having been drawn out by his Country Chirurgeon at the first dressing, could not be drawn out by me at the second, but occasioned great pain vvith Inflammation, great heat and vvatchings: Although he had many other considerable Wounds upon him, to make a derivation ; yet vvvas his Gun-shot more vexatious then all the rest, until I extracted the Bullet and raggs carried in vvith it, yet this vvvas but a Pistol Bullet. But after I drew out this Bullet, my digestion became good ; and by equal Bandage, vvith gentle compression of parts, I united and healed it in ten or twelve dayes, vvhich I doubt vvould not have otherwise been cured in three moneths.

Nay, vvwhile any of the raggs remain in the Wound, it vvill never cure ; but the Extraneous Bodies drawn out, there is little difficulty

culty in the curing these Simple Wounds; if drest, as I shall here following show, but if handled, as some have lately taught, they are as so many poysoned Gun-shot-wounds.

Now for the taking out of the Bullets, and other Extraneous Bodies, there are two Methods; 1. One to extract them by the vway they vvent in; The other to open them a way, by vvhich they would, if their force had not fail'd them, have passed themselves through.

Two methods of extracting Bullets.

For to take them out the vway they vvere forced in, you must place the Patient, as near as he can guess in the posture he was in when shot. And, if by reason of his weakness or other Infirmary, he cannot without prejudice, be so scituated; let him be laid in a position which may as neerly answer it, as may be; Least some part of a Muscle, Tendon, or Ligament, obscure what you desire to make manifest. Then make search for it with your finger or probe. The Figure of these Wounds is alwayes round; the Bullet forces the Flesh in with it, and its entrance presently contracts closer; but its going out is more laxe; you may guess by view of the Wound, the largeness of the Bullet, and comparing the Figure with that, make choice of a fit Instrument for extraction, whereof you ought to be alwayes well furnished. Your main care in this work is to find out the Bullet, which if you fail of by searching into the Wound with your Probe: Then you are to feel the parts about, it being wonderful to consider how these Shots do twirle about, at least seem to do so, when the posture

1. The way the Bullet went in. Methods of search.

is

is changed in which the Wound was received.

As for Example ; A man hath been shot in the Cheek, and I have cut out the Bullet behind in the Neck : A man shot in the outside of the small of the Leggs, the whole Member unmeasurably swell'd and inflamed, no possibility of finding it out either way ; at last by chance, I felt it in the inner side of the Thigh above the Knee. And so another being wounded in the outside of the Arme, I have cut out the Bullet below the *Scapula* ; If the Bullet have not been in so long (as in some of these cases) that the parts are extremely pained with Inflammation and Tumor, the pain where the Bullet lodges discovers it.

Observation.

A common Souldier shot in the Breast through the *Sternum*, lay roaring very grievously, complaining of the pain of his Back. I was fetched to him ; and turning him on his side, I saw the Bullet lye like a small Wen or Scrophul, thrusting out under the Skin, not far from the Spine. I made Incision over it, according to the length of the part, and thrust out the Bullet as easily as I could desire. I dressed it, and the Souldier ceased his crying, and acknowledged before us, his pain was from the Bullet in the Skin. For indeed the Lungs and other internal parts, are seldome sensible of pain, when wounded through ; they discover their hurt by other symptomes. The common Souldier dyed, as most do that are shot through the Lungs.

If

If in your searching for the Bullet, you light on the part, though there be no Ex-tuberance, or ought to be felt, yet his pain there, will be a good sign for it; if no ac-cident occasioned that pain. Make your way there by Incision, avoiding the Vessels, and take out the Shot, and what else offers it self; by this you do both quit the part of its troublesome Lodger, and withal make way commodiously for discharge of matter, which in regard most of these Wounds are *Sinuous*; (the Bullet turning aside, when it is hindered in its journey forward) for want of dis-charge might in those places occasion Fistu-la's and hollow Ulcers, not without ill qua-lity.

In the work of Extraction, take great care **Caution:** you lay not hold of some Nerve or Tendon, and so pluck them along with the Bullet; for by so doing you may cause intollerable pain and grievous accidents; you must therefore neither open nor dilate your Instrument, until you may take hold of the Bullet, without any of the circumjacent parts.

## CHAP. III.

*The first dressing after Ex-  
traction.*

First dress-  
ing after  
Extraction.

**A**S soon as you have made a separation of these Extraneous Bodies, if you judge the Wound to be so well conditioned, that there is neither fear of Putrefaction, nor Mortification, (as in recent Wounds there is not;) Be not discouraged at whatsoever evil aspect it hath at present; but consider its Livid colour to be natural in the Wounds, when the Contusion is not simple in the Skin, but through Flesh and all, as far as the Bullet hath entred, depriving parts of their sense, to the very bottom, and hath the colour of a gangreened or poysoned Wound. Therefore I pray disturb not your thoughts; but having taken out the Bullet, dress it up as a contused Wound, with *Ol. Catulor.* as hot as the part will bear, not giving credit to any that shall perswade you to the contrary; And it is thus made.

*Re. Ol. lilior. alb. lb. vj.* boyl in this two new whelpt Puppies, until the flesh fall from the bones, then add *Lumbric. terrest. in vino lotor.* lb. j. boyl these a while, then strain it by a gentle compression; to the strained liquor add *Terebinth. 3 iij. sp. vini 3 j.* reserve this for your use. Or this;

*Re. Ol.*



R. *Ol. lini, Canab. an.* ʒ iiij. *Ol. lilior. chammeli an.* ʒ iiij. *Terebinth. ʒ j. m. f. A.* Or this ;

R. *Terebinth. opt. ʒ iiij. Thuris Mastich. an.* ʒ iiij. *Myrrhæ ʒ j. Ol. Aparici ʒ ij. Ol. lumbric. & sambuc. an.* ʒ iiij. *m. R. Ol. olivar. ʒ j. Terebinth. ʒ ss. Gum. Elemi ʒ ij. aruginis pul. ʒ ij.* Or this ;

See of A-  
panci in  
simple  
Wounds.

R. *sp. vini ʒ ss. Terebinth. ʒ j. Ol. Hiperici & lini an. ʒ ss. sang. dracon. subt. pulveris ʒ j. m. f. A.*

With this I cured a servant of *A. D.* shot into his hand, this digested the Wound, after separation began, I felt part of a bone bare, which I drest with *Extrac. scord.* dissolved in *Mell. Ros.* with which I deterg'd, and feeling no more of the Bone, I incarn'd and cicatrized with *ung. Tut. &c.* in few dayes without any difficulty, *Linement Arcei* with any of the above mentioned Oyles is very good, adding a few drops *Ol. Terebinth.* which by its subtilty penetrates, and by its heat rouzeth parts, and putteth them upon digestion and hastens separation.

Observa-  
tion.

*Quercitanus* proposes this. R. *succi herbar. Tussilag. oxalidis an.* ʒ iiij. *Caricas ping. Nxx. Thur. ʒ ij. Resin. latic. ʒ ij. ss. Axungia Gallin. Auferin. an.* ʒ ij. *Butyri recentis ʒ ss. Olei visis pomorum composit.* ʒ j. put this altogether in a Vessel close stoppt, boyl them by a gentle heat the space of lix hours, then strain them out hot, and evaporate them to a good consistence: Or this ;

R. *Cera nova, Resina, picis naval. an.* ʒ iiij. *sen Hircini, medulla, cruris, visulini an.* ʒ ij. *asypi, ʒ j. Ol. olivar. aur lini, ʒ j. liquefactis omnibus*  
trans-

*transcollatis, F. ung. quod reservetur ad usum.* He adds a  $\text{ʒ}$  j. of *precipit.* to every  $\text{ʒ}$  of this. But this in recent Wounds will not be necessary; for you will find by Experience, that these Wounds will digest and suppurate (and that frees them from putrefaction.) Nor will it be alwayes for your Credit, if you consider the quantity of Balsomes we use in such Wounds, and the prejudice some people have to the use of *Mercury*; yet *precipitate* & *Axungia* with a few drops of the *Terebinth*, was a common Medicament among us. But I refer that to you, it being a good Medicament to hasten separation of the *Escars*; you are to dress up these Wounds lightly with a proportionable soft Tent, and Plegdits dipt in some of these digestives very warm, not to scald parts. After that Embrocate the parts about with such like.

*R. Ol. Lumbricor. Ros. Myrtill. an. ʒ iiij. Aceti cochl. ij.* mix them; in the first dressing, your Applications over the Wound and parts circumjacent, should be such as have *Vim Astringendi* & *Intercipiendi*, to hinder the flux of humours, and strengthen the part, take *farina hordei* & *fabar. an. ʒ vj. Ros. rubr. Bacc. myrtill. an. ʒ j. s. sem. Cydon. ʒ vj.* boyl these in *Posca*, to the consistence of a *Cataplasme*, adding at last two new lay'd Eggs, with *Oxymel ʒ ij. ss.* Apply this over the Wound and part; if you apprehend this too heavy, you may add *Ol. Myrtill. & Ros.* and Wax as much as is necessary, and make it into the form of a *Cerote*; and above the Wound lay one of the defensatives, of which, or the like, you may

may have alwayes ready by you.

R. *Bol. Armen.* ʒ iiiij. *Terr. figill.* ʒ iiij. *sang. dracon.* ʒ ij. *Corn. Cervi.* ũst. or burnt bones ʒ ij. *s.* our Juice of Sloes dryed, *an.* ʒ iiij. *Cera* ʒ iiiij. *Ol. Ros. & Myrtill.* *an.* ʒ. vj. *Acetis* ʒ xij. boyl these to the consistence of a *Cerote*, add four whites of Eggs. Or this;

R. *Palv. Ros. rubr. Bacc. myrtill.* *an.* ʒ j. *Bol. Armen. Terr. figill.* *an.* ʒ vi. *succ. plantagin. solan.* *an.* ʒ ij. *Aceti opt.* ʒ iiiij. *Ol. Ros. & myrtill.* *an.* ʒ iiij. *cera q. s. m.* Apply your Compresse, dipped in *Aceto* or *Oxicate*, let your Bandage be put on equally and gently, to retain your dressings, and hinder the Influx of humours.

Having thus dress the Patient, presently Bleeding. consider of letting of him Blood, to prevent ill accidents, and especially if he lost little or no Blood from the Wound, and that there be a *Cachochymia*, *Revulsio enim qua è directo fit, celerrimam utilitatem adfert. Galen. de sang. Missione.*

A Glyster should preceed Phlebotomy, Glysters. made of the decoctions of *Mallows*, *Violets*, *Beets*, *Mercury*, *Bays* and *Juniper-berries*, with *Ol.* of *Linseeds*, honey of *Roses*, *Hyera Picra*, or *Elect. lenitive*. But if you have not this in readines, make your Glyster with the broath of *Flesh*, *Ol. Chamom.* *Sugar*, and the *Yolk* of an *Egg*, and a little *Salt*, if your broath be not salt, or salt-water, or broath out of the *Kettle*, with a few flowers of *Chamom.* boyled in it and strained; adding a little *Butter* or *Oyl*, and red *Sugar*, is a good Glyster in time of need.

Then

**Epithema** Then you are to prepare some Cordials to resist the putrid vapours, you may also fortifie the spirits if there be need, by some *Epithema* of your distilled Waters; as *Balm*, *Bugloss*, *Acetum*, *Ros*, with the Powder of the roots of *Tormentill*, *Scordium*, *Scorzonera*, *Contrayerva*, *Treacle*, *Mithridate*, &c.

**Cordials.** And with these you may make Cordials also, adding Syrupe of *Citron*, *Gilliflowers*, *conselt. Alkermes*, and for your Common people, an. ʒ j. of *Treacle* or *Mithridate* in White-wine dissolved, for the better sort, take *Aq. Bugloss*. *Cinamom.* an. ʒ ij. *conf. Alkermes* ʒ j. *lapis Bezoar. occid. gr. xxij.* *syr. Citri cochl.* ij. m. for an *Epithema*.

**Dyet.** *R.* *Aq. Melesse borage Bugloss.* an. ʒ ij. *Aceti Rosat.* ʒ j. *species Diarhodon.* ʒ j. *Croci* ʒ j. As to their manner of Dyet hear *Celsus*, *Lib. 2. Cap. 26.* *Ubi aliquis grave vulnus accipit à cibo tantum abstinere debet, quantum vires patiuntur, adeo tennis esse debet dyeta, ut vix sustineatur;* In great Wounds it is necessary to observe a spare Dyet, as Barly Gruels, Panadoes, thin broath, or a poached Egg, this much availing to the preventing of Inflammation. But in this the Patients custome must be considered, also the Air must be temperate, and dress not in the Air, *frigidum enim inimicum vulneribus*, Cold is an Enemy to Wounds: rest is also required as well to the mind as the body. Therefore having thus drest him, and laid him to rest, with ʒ vj. *syr. de Miconio*, with *cochl.* ij. *aq. Cardiacæ*, in ʒ iiij. *aq. papaveris*.

The 2<sup>d</sup>  
days dres-  
sing.

We are now to proceed to the second days work, and we are here to consider the habit

of body, and more particularly what concerns the Wound. And in these Gun-shot-wounds it may be convenient the Body be gently purged by Lenitives only, as is formerly said; *Purgatio enim per alvum plerisque vulneribus prodest*, you thereby carrying off the bilious and serous humor, which from their heat and tenuity, are most apt to ferment and flow into these wounds, and cause Pain and Inflammation, and other ill symptoms. In which cases use *Cassia*, *Manna*, *Tamarinds*, *Syr. de Cichor. cum Rhabarb. Ros. solut.* These are lenitive, and may be taken in Whey or Ptisan, and are fit to prepare the humor.

But as for stronger Purgatives, *Hipp.* saith well, *Cocta sunt purganda non cruda*, which is more especially true when you speak of *Scammoniate* Medicines.

Having thus proposed a general way of purging, you must consider the necessity of your particular case; we shall now again prepare our dressings, and look into the wound, and apply such Medicaments as may be fit for the quality thereof: And now it is necessary your Fomentation be ready, where-out may be wrung a hot stupe; to which end;

*Re. sumitat. Hiperici, Centauri, Scordii, Absinth.* Fomenta-  
*an. m. j. Flor. Ros. Rubr. Chamom. Mililot. Sambu-* tion.  
*ci, an. m. ss. Furfuris p. j. coq. in Aq. Fontan. ad*  
*libij. ss. colat. adde vini Austeri libj. sp. vini 3vj. ft.*  
*Fotus*: These will give a breathing to the parts, and defend the Wound from the Air while you consider it. If all be well, proceed with the same, but if it be accompanied with pain, foment with this & *decocti Rad. Althe. malvar.*  
C
fol.

If pain.

*fol. verbas. Chamom. Melilot. sem. lini. fanigraci.* boiled in Sheeps-head-broath, or other; and of the *faces* of this Fomentation you may make a *Cataplasma*, adding *farina hordei* ℥ss. *sem. lini. Cydonior. pulv. an. ʒj. ung. Basilic. & ung. Dialthæ. an. ʒj. aux. porc. vet. qf. Croci* ℥ij. four whole Eggs, and apply it over all, or the former *Cataplasma*. It cherishes the heat of the part, furthers suppuration and is *Anodyne*. You are to make the Bandage as before, and continue this way of dressing to the seventh or ninth day, until you have digested the Wound, and the *Escar* is separated, and that you have laudable *pus* (as you are wont to call it) which is *Album, aequale, leve & minime fœtidum*, Equal, white, light Matter not fœtid or ill scented; then we must seek for other kind of succour, which may restore the wounded part to its former sanity.

If after separation of the *Escar* parts be not well digested, or want deterfion; ʒ *succ. Agrimon. Centaur. min. plantag. Apii an. ʒj. Mucilag. hordei ʒiiij.* boil these together; adding *Terebinth. venet. ʒiiij. Mel. Com. ʒij. farina herd. cribrata ʒiiij. Croci pul. ℥j. ft. mundificativum*: To this you may add *Aloes, Myrrha, Sarcocol. Rad. Aristoloch. Gentian Ireos*, for the Incarning these Wounds: If you desire rather Injection, the same Ingredients may serve. But in the use of Injections do not stop the Orifice to keep the Liquor in, for you so distend the Ulcer and make it more sinuous.

## CHAP. IV.

*Of Accidents befalling Gun-shot-wounds, and of Sinuous Ulcers.*

**B**Ut from the first to the eleventh day; many Accidents are wont to happen to these Wounds, which not onely impede the Cure, but often, without timely help, destroy the Patient. And these are vehement Pain, Inflammation, Erysipelas, and other deadly Accidents, as Gangreen and Sphacelus, all which take their beginning from Inflammation. Therefore I have elsewhere particularly treated of *Inflammation* and *Erysipelas*, that you seeing what it is may in its beginning prevent its increase: It commonly proceedeth from a very ill habit of Body, or from the ill handling of these Wounds in the beginning.

The remedy is to prevent the Influx of more humours, & evacuate that which is already fallen into the part. The first way is by bleeding largely and purging, both which are directed you in the first dayes work, if you omitted that then, you must perform it now.

The second way is by *Externals*; and that is by *Anodynes*, which may mitigate and repress

the heat of the part; as also by Discutients and Concoction of the matter in the part affected; which is performed by those Medicaments which were proposed in the Cure of the Wound, with observation of dyet, &c.

The Prevention and Cure of these, vvith the manner of handling them, you may see more particularly in the Treatise of *Phlegm* and *Erysipelas*, how in the beginning it is to be done with *Refrigerants* and *Repellents*; and in their state by moderate *Calefaction* and *Discutients*: and afterwards by *Dissipants* and higher *Discutients*, to which Treatise I refer you.

Sangreen

The next and most cruel symptome, is Mortification of the part, which so often attends great Inflammations; and is shrewdly to be suspected, when they yield not readily to *Discutients* or *Suppuratives*. In their Wounds it happens most commonly through a Suffocation of the natural heats of the part; or through the great concourse of humours, or too refrigerating and repellent applications, in the time of great *Inflammations* and *Erysipelas*, which have infeebled and hindered the *transits* of Spirits into the part. It is perceived by the change of colour, it begins to look Livid, the lips grow flabby, the tumor sinks, and it gleans and is blistered, and blew spots after a while appear.

When you see such a change begin, you must presently prepare to withstand a Mortification by Scarification, until the blood come, not onely about the lips of the Wound, but deep into it through the *Escar* to the quick, and



and suffer it to bleed freely, and make the party sensibly feel, that by such means you may disburden it of part of what would have choaked it, and make way for the entrance of the force of the Medicine.

Then foment the part with a good *Lixivium* made of Ashes and Salt, with *acet. vin.* in which you may boyl *scord. Absinth. centaur.* and such like; and after Fomentation wash the scarified parts, and dress the Wound with *Ægyptiacum, theriac. venet.* dissolved in *sp. vini*, adding *Calcin. vitriol. &c.* and a Cataplasm of *farine, Hord. fabar. orobj. lupinor.* decocted in some of the same *Lixivium*, adding *oxginel* to it, applyed over all. But for this I refer you to a particular Chapter of *Gangreens* and *Sphacel.* for further directions therein; as the *Gangreen, Separates*, you are to deterge; to which end use *mundificat. ex Apio* or *Paracelsi*, to which by adding *precipitat.* you may happily effect your Cure.

But in the separating of contused parts, as I have often told you, great Fluxes of blood usually burst out upon us. Thus in a Patient of mine wounded by Shot, through the inside of the *Radius*, upon separation of the *Escar*, a great deal of blood broke out with impetuosity. I stopped the Orifice which was nearest the Artery, with some mild aglutinative Powder; suppose *Galens Powder ex thuris part. ij. Aloes p. j. cum pilis, leporinis, &c.* The blood then bursting out at the other Orifice, I applyed over that also the same Powder, and rould up the parts with a good Compress dipt in a Stryptick Decoction, laying my common

Hæmorrhage.

Observation.

See Treatise of Wounds,

Sinuous Ulcers.

Defensative over all, and not opening it till three or four days after. How such Fluxes of Blood from the Arteries are to be restrained, you may see in its proper place.

Gun-shot-wounds, the *Escar* being once fallen out, become Sinuous Ulcers; especially after great mischievous Accidents, and vvhere Bandage cannot be used to preserve the tone of the parts, as in the upper part of the Thigh and Hipp, &c. these Cavities causing much pain to the Patient, and difficulty and trouble to the Chirurgeon, vve shall consider their Cure. Our indication therein, is from the parts affected, the largeness of the Wound, Contusion and Laceration of parts: for contused Wounds, must of course corrupt, and turn into matter.

And if the Bullet or any Extraneous Body be yet remaining in, the parts become more lax, and are accompanied vvith pain and influx of humours, and the included Body is streightened in its passage out, through generation of flesh, which causeth much difficulty in the Cure; especially if a *Cacochymia*, or *Lues ven.* be joyned vvith it, you vvill scarce cure your Patient, vvithout exhibiting *Antivenerial* and *Scorbutick* remedies.

To prevent *Sinuosities*, you are to enlarge the Orifice at first, or keep it so wide open, that the matter that is daily there ingendred, may have free passage out, vvich if it may not by the vvay the shot came in; then you must consider, how in another place the *Sinus* may discharge it self, this being prudently effected, and the matter thereby discharged

charged, you shall speedily perfect your Cure, and vvith ease.

But before you make this Apertion, you must consider, vvwhether by altering the Position of the part, or by Compression by Bandage, or by hollow Tents, the matter may not be brought out. And to make the Cure of these Cavities more facile, you must endeavour to place the member in such a figure, as the Wound may be depending, and you must have Stupes, Spunges, Compresses, and the expulsive Bandage; these prest out of red Wine, vvherein is infused *Flor. Ros. rubr. myrtillor. Cort. Gran. Balaust. nuc. Cypress. sumach. acacia*, and dress it twice a day, and Injections of the same Decoction, vvith *Myrrha, Aloes, sarcocoll. Rad. Irid. Aristoloch. sp. vini. mal. Ros. Aq. Calcis, Aluminosa*, and such like.

Sometimes in a Wound by the upper part of the *Biceps diepe*, the matter not being likely to discharge it self, I have by a Seton Needle preforated it through, and retaining the twisted Silk, until the parts have been digested, then drawn out the Silk, and by a Tent kept that open a few daies, until the upper part by good Bandage Agglutinated. Then the discharged matter below being little and good, I have left of the use of the Tent, and healed it up.

So I have often in Wounds of the Thigh; vvhere by no Position or Bandage I could otherwise effect it. And here in the *Covent Garden*, in an old *Sinuous Ulcer*, vvwhich discharged it self from the right *Ilium* through under the *Inguen*, viz. by the inside of the Thigh four

Observation.

fingers breadth below that place. I had great difficulty to make out whither the *Sinus* tended; at last I found by my searching Candle, that it wanted a little more then an Inch to pass throughout by the *Glutens*, and that without any opening that way; the matter would continue to make its Cavities, upon which I applied a Caustick there, whither I supposed the end of my Probe tended. Then having taken out that *Escar* by Incision, I prest with my Probe against my finger which was within the *Escar*, I there felt the end of my Probe, though at a distance, upon which I passed a long Canula instead of my Probe, and feeling the end of that, I passed then a Needle through this Canula, and so through the *Escar*, which I take hold of, and the while pull back my Canula, and the Needle being free from incumbrance, I pull'd it forward, with a twisted Silk at the end of it, and cutting off the end of the Silk from the Needle, I continue the Silk as a Seton there: the Needle, Canula and Silk were first anointed with *Unguent. Dialthe.* or *Ol. lilior.* or the like.

Observation.

One shot in the Face betwixt the Nose and Eye on the right side into the *Ethmoides* by a Pistol Bullet, after some years that this Wound was cured, was troubled with a fretting Ichor, which discharged by that Nostril, and at his first arising up in a morning out of bed, would discharge half a spoonful of a yellowish colour, and had made a chop or gutter at the lower end of this Nostril, by its acrimony. After some while, he could feel upon bending of his head backwards or forwards,

wards, the Bullet to roul to and fro.

He complained to me of his grievance at the *Hague* in *Holland*, a little before His Majesties going into *Scotland*. I propos'd to him, as the onely way to free him from this grievance, speedily to cut through the *oss. Palati*. he assents to it. I placed him in a clear light, one holding his head steadily, I cut into the roof. The flesh was so close tyed as it would not yield to my *Spatula*, as I expected; upon which, by a quick working *Escarolick* held to the place upon Lint a few minutes, I consumed the soft part to the bone. Then I cut into the bone such a hole, as I, by the moving of his Head, could see the Bullet lodged in the hole, but this was not done at once sitting. Yet by degrees the Bullet was taken out, and he eas'd of that discharge of matter, which threatned a filthy, carious, fistulous Ulcer. My attendance upon His Majesty into *Scotland* hindred my prosecution of that Cure. I left him in the hands of a Chirurgeon there; and since have often seen him at Court: but the Ulcer did not shut up with a *Callus* as it might, had it been closely attended.

This way by making Incision, is the speedy way of curing all these Sinuous Ulcers, if it may be safely done without wounding great Vessels, Nerves, or Tendons. Your Incision is to be made according to the length of the Fibres, and a Probe or Canula must be your guide. Having once made your Apertion, you may enlarge it as you see cause by Incision, Gentian, or Sponge, to discharge the impurities of the Ulcer, then digest it with the

Method  
of cure in  
Sinuous  
Ulcers.

Com.

*Com. digestive ex Terebinth. vissell. ovi*, and if there be occasion, you may add a little *Mell.* to it and *Myrrha Thuris rad. Irios*, to make it more exiccant, but commonly the depending part opened, the Wound is cured by Bandage, and keeping open this last Apertion a few days. If these grow Fistulous, you shall find the Cure of them in another place.

## CHAP. V.

### *Gun-shot-wounds with Fracture.*

**H**AVING declared unto you the way of curing Gun-shot-wounds in the soft and fleshy part; I purpose now to proceed to the curing them, as they are complicated with the fracture of the Bones, whose firmness, driness, stability and solidity cannot defend them from these Inconveniencies. Nay, in the case I am to speak of, they are rather Discomodities. For when the Bullet striketh like lightning, were they softer 'twere the better, that the Bullet might pass and not shatter them.

Not any of the five sorts of Fractures mentioned by the Ancients, which these blows will not occasion. Sometimes they will cleave the Bone,

Bone, *assulatum secundum longitudinem*, according to the length; and other times they will *per transversum frangere*, break the bones athwart. Other times they will divide it *ad unguem*, like the Scales of a Fish. Nay, if the Bones be dryer then ordinary (as in elderly men, and in such as Nature or Diseases have made them so) they will grind the Bone like Meal. Yet I have seen, and drest a Souldier that was shot through the Joynt of the Ankle, without ever breaking the least *Cartilage*.

The wayes to know when there is a Fracture in the Bone are many; *Hipp.* bids us compare the sound part with the parts affected, and observe the Inequality.

Secondly, You shall perceive a Cavity if you touch the parts above and under the Fracture.

Thirdly, If you handle the fractured member, you shall perceive a crashing of Bones, by reason of the mutual attrition of the hard Bodies.

Fourthly, There will be commonly extraordinary pain, in regard of the divulsion of the Nerves, and distortion of the Tendinous Bodies; or the pricking some sensible part, by the shivers of some Bone.

Fifthly, There will be an Impotency of the broken Member, so that the Patient cannot lean upon it.

Sixthly, The antecedent cause will teach much in this case (*Gunshot*) then which there never was (or ever will be, I believe) invented a more powerful one.

Seventhly and lastly, The Asperity and Inequality,

equality, or roughness of the Bone manifested to you, but the search will give you no small assurance.

Prognosticks.

In Fractures made *secundum longitudinem*, all Authors agree that the Member which is hurt must needs shew thicker then the other. Concerning Prognosticks, you shall understand,

First, That Fractures are more easily cured in young people then in old, for the greater distance there is *à pueritia*, the more the *humidum primo-genium* is exhausted. Wherefore in Youth, Bones will be again Consolidated by the first Intention, in others only by the second, *Interveniente materia (aliena) qua non est ejusdem natura cum osse.*

Secondly, Bones receive a quicker Agglutination in Sanguine, then in Chollerick Bodies, by reason of the benignity of the *Serum* which sendeth out better matter for a *Callus*.

Thirdly, Bones are broke with less danger in the middle, then near to the Joynt; they are both more hard to be restored, and to be kept so restored. And because of the multitude of Symptomes (which in such Wounds cannot but *Supervene*) are not without great difficulties to be cured.

Fourthly, Those Fractures are dangerous which are made so deep in the fleshy parts, as our hands cannot well come at them, to place them right.

Fifthly, A great Fracture is of more danger then a small. I term that a great Fracture where the solution of continuety is large, the accidents suddain, many and terrible.

Sixthly,



Sixthly, Fractures made by Gun-shot, are of far more danger then any other, in regard of their multiplicity of Complicacie.

Seventhly, Among all Fractures the most tolerable is the *Transverse*, if it be oblique 'tis worse; still worse if the Bone be much shivered; but worst of all if the Shivers be sharp and pungent. Amongst the Cruisers in particular Frigots from *Dunkirk*, it was complained that their Chirurgeons were too active in Amputating those fractured Members, as in truth there are such silly Brothers, who will brag of the many they have dismembered, and think that way to ly themselves into credit: but they that truly understand Amputations and their Trade well, know how villanous a thing it is to glory in such a work.

In the Roman History you will find it was not allowed at all. *Livy* tells you their reward among them. But later Experience judgeth it commendable, if it be necessary, and done in its proper time, that is to say, suddenly; whereas Amputations the next day are worse then death to them.

Not so in proper time; for in the heat of Observation. Fight I cut of a mans Arm, and after he was laid down, the Fight growing hotter and hotter, he ran up and helpt to traverse a Gun, and a *Walloon*, while I was cutting of his Legg, cryed; *Depecha vous con nous vendrone a terre nous buiron*, Hasten ye, hasten ye, when we come a shore we will so drink: But amongst us aboard in that Service, it were a great shame to the Chirurgeon, if that the Operation were to be done the next day, when symptoms were upon the Patient,

Patient, and he spent vvith vvatchings, &c. Therefore you are to consider well the Member, and if you have no probable hope of Sannation, cut it off quickly while the Souldier is heated and in mettle. But if there be hopes of Cure, proceed rationally to a right and methodical Cure of such Wounds. This following Method is best.

Cure:

Cleanse the Wound first from all strange Bodies, as Bullet, Armour, Apparel, Shivers of Bones. If the Fracture be near a Joynt, the violence of the blow will many times add a Dislocation also to it. If that happen, restore the Joynt first to its place, before you meddle vvith the Fracture; these dislocations are made by great Shot, or pieces of great Wood, whose force shatters the Limbs in pieces, or carrying it quite away: but this later I never see so done, but that vvhen the Member is shattered it hangs by the side, by some little part of the Musculous Flesh and Skin.

Smooth  
the stump.

Here your vvork is vvith a good Razor or Knife presently to plain the Stump, and pull up the Flesh, that you may saw off the end of the Bone as even as may be.

Observation.

In one of these, whose Arm was shot off above the Elbow, in haste we drest him up, his shoulder proved out of joynt: The next day we could not set it by reason of the Anguish of the stump, it was a greater pain then his Wound, and pained him for some months after, but it happens often and in short stumps is remediless. One of our Captains Reformadoes had been served so formerly with his stump.

If

If you will endeavour the remedying it, you must do it by help of a Bandage, made above the stump, but if it be above the Elbow, how will you fasten it? yet in some Bodies they will be restored easily, therefore attempt it before you dress the member.

In another that had his Leg shot off in the place of Amputation below the Knee; some two months after, when I wondred the Bone would not scale, I put my Forceps to feel whether any part of the Bone was loose, and feeling it very loose, I took hold of it gently, and found it willing to come away, it was the *Apophisis*, or head of the great Bone which makes the Knee. I was surprized at it, but considering what is loose must away, I pull'd it out to the amazement of the lookers on, this was relaxt from its ligament, by the force of the blow. Observation.

In these fractured Wounds made by Gun-shot, the Chirurgion ought to propose two things to himself, first the Fracture, and then the Wound. To proceed orderly you begin with the Fracture, viz. by Extension and Coaptation, that thereby the Fracture may be reduced to its proper seat; which in all these cases must be performed with much steadiness and discretion, not with such force as in them without a wound, lest the *Musculous* or *Nervous* parts being torn, bruised or crushed, should cause extreme Pain, Convulsions, and Mortification (and that which in special we seek to prevent) death may unaware ensue.

And therefore this Operation would, if it possibly might, be dispatched presently after the receipt of the Wound, before Inflammation come on; but if the part be accompanied with a Dislocations when to be reduced.  
Flux

Flux of Humour and Inflammation, before the Patient be brought unto you, then you must forbear the Extension until the third, seventh, or eleventh day, according to *Hipp.*

And if it should so happen, that through such Inflammation the Operation be delayed longer; it is then to be feared, Putrefaction, and other ill Accidents will happen, and your Patient run great hazards of his life, or a continual lameness of that Member.

The Extension made moderately; fit the Bones into their former place, with what gentle dexterity and lenity you can possibly. If the Wound be narrow, dilate it by Incision at the first, for these Wounds require more dilatation than any other, that not only the bruised and vitiated blood and other excrements; may have a free passage; but that also by this means the shivers of Bones, of which these Wounds use to be very full, may with less trouble be discharged by nature, or extracted by your selves.

*Dressing.*

If you make not this dilatation in the beginning, you may afterwards perhaps be forced to do it, when the part is accompanied with great defluxion and pain, and the bones altered by the retention of matter, and not only to cut and open the Wound to the vexation of your Patient, but to keep it so dilated.

Now consider whether the Bone be bare or not; which you may satisfy your self in by your Eye, or your Finger, and the slipping of your Probe. If it be, you must apply next to the Bone some dry or exsiccant Medicine,

*sicca*

*secca* ; *siccis Gaudent* , dry to dry. Of this sort are dry Lint, Powders of the roots of *Iris*, *Myrrh*, *Aloes* , *Thus* , *Spirit of Wine* ; take heed of *Oyl*, for it makes the Bones apt to foul, and hindereth *Callus*. This done, proceed to the Wound, which is alwayes with loss of substance, and commonly with lacerated Flesh , what of it cannot be restored to good purpose cut away , and dress up the Wound with your *Suppuratives* warm, as hath been proposed in simple Gun-shot, with an Emplaister of two parts *Diachalchith* , and a third *Paracels*. with *Ol. Ros.* or *Empl. de minio malact.* with *Ol. lumbric.* over the Wound, and over the whole fractured Member , this *Empl. Diachalcit.* with the addition of *Colophonie* , *pul. Rad. consolide. Mai. Bol. Armen. cort. Granator. Succo plantag. Ol. myrtill. Lumbricor. & cera, qs.* as a *Cerote* over all, or double cloaths dipt in a red Wine vvarm, wherein hath been infused *Flo. rosar. Rubr. Balaust. sumach. Baccar. Myrtill. sumit. Absinthii, &c. Ol. Ros. &c.*

Dressing  
of Gun-  
shot with  
Fractures,

The third Intention which is required in these fractured Wounds , is Deligation ; for unless they be rightly fitted, none of these Fractures , of what sort soever , can hope for perfect Union and Cure. In Simple Fractures without a Wound , all kind of Bandage may be admitted , whereof you may see in my Lecture of those Fractures various sorts , with many circumvolutions about the Member. And once in seven dayes opening will serve your turn. But in these another method of binding is required , for here the Bandage is to be

Deligati-  
on.

Bandage  
to be dai-  
ly loose-  
ned in  
Gun-shot-  
wounds  
with Fra-  
cture.

D

loosened

loofned daily, the Wounds lookt into and drest: They being here to be long kept open, for discharge of Excrementitious and Purulent matter made in them, which otherwise would corrupt the Bones.

Manner  
of Ban-  
dage in  
Gun-shot  
with Fra-  
ctures.

Therefore in these like Wounds, you must use such a Bandage as may least shake the fractured Member, for these Wounds being every day to be drest, the so often rousing up the Member would cause grievous pains, and hinder union. Therefore it is that Authors have invented so many kinds of Bandage, to answer the intentions of dressing the Wound, and yet keep the Member immoveable. And your Bandage in this case, is to be made of softer and broader linnen clothes, then that we use in Simple Fractures, that it may comprehend both the Fracture and the Wounds, keeping the lips down, yet not hurt them, by its too hard compression, *Minus astringenda sunt fascia quam si vulnus non adesset*, saith Celsus.

Therefore we make choice of a piece of Cloath soulded three or four times double, to give them the more strength, and of such breadth to encompass the lips of the Wound and fractured parts; and of that length as to come once about the Fracture. It is to be cut into three pieces from the ends to the middle, which middle lyes undivided underneath, to bear more equally the fractured Member; and these ends to come over one another, with a Compress between, over the Wound, to press the lips of the Wound equally down, which would otherwise become crude, and put out great lips. The Compress also serves to receive the

the matter, and fills up the inequality: These are so to be fastened, as that you may dress and undress the Wound without disturbing the Member.

But for that it happens, that in these Gun-shot-wounds the Bones are shrewdly shattered, and the Wound lacerated; and by reason of the largeness, the Wound is most painful, and the part so weakned by its Fracture, as it cannot be kept steady by this Bandage: therefore we make use of *Ferula* or *Splints*; whereof I have made mention in my Lecture of Fractures in General, with the Judgment of the Ancients, who have been very Industrious in contriving ways to make equal compression, and leave a way for the dressing of these compound Fractures. Splints.

Their use is not to be until the Inflammation and flux of Humours be off, which is not until after the seventh day: Mean while I propose *Splenia*, which are linnen clothes foulded four times double, and cut in length and breadth like the *Ferula*, so as it may encompass the whole Fracture: these are to be spread with *Galen's Cerote*, or any Oyntment, so thin as they may adhere to the part only until you have put that Bandage over it; and this is that I propose where there is pain and fear of Inflammation. When to be used.

These will handsomely strengthen the part, and make such equal compression, as the Bones may be kept in their place, the serous humours prest out of the *Cavernula*, and the fractured Member lye soft, which is a great help in these Wounds; the whole welfare of the Patient de-

Past-board.

Laminae  
or Plates.

pending upon the easie Bandage and Position of the Member. The Pain and Inflammation gone off, and the Wound digested, (or if you think the Member not so subject to Inflammation, and that it require a greater strength to support it) you may use Pastboard cut into pieces proportionable to lay over those *Splenia*, or having fastned those *Splenia* by the broad Bandage with three heads, cut a peice of Pastboard fit to receive the lower part of the Member, wet it to make it more pliant, cutting a place commodiously to dress the Wound at. Under this Pastboard three Ligatures are to come, which, after you have placed another Pastboard above to answer that underneath, you are then to firm close by these Ligatures in the most convenient place, for the ease of the Patient : or if the *Splenia* be wet in whites of Eggs and applyed, they will strengthen the Member, and keep it steady, without those of Past-board. To this purpose we also use *Lamina*, Copper or Tin Plates with soft linings to receive the fractured Member, with cuts in the out-side to receive three Ligatures answerable to the first underneath. These are to fasten and loose at pleasure, without disturbance to the daily dressing of the Wound. These *Lamina*, or what ever else you use, must have a large cut in them, for the Wound to be dressd through.

But I have alwayes observed inconvenience in these Plates, that there being not so good Compression made upon the lips of the Wound through those holes, as to hinder the lips from thrusting. There arises a laxity and indigesture in the Wound ; and besides the matter that



that so discharges; heats the parts, and in hot weather corrupts and breeds Maggots.

Therefore I make the Pastboard or *Lamina* over my first to encompass so much of the lower parts as may support the Fracture, and come within an Inch of the Wound. And over the Wound it self I fasten a *Splenium* of Cloath, folded four times double, or a *Ferula* of Tin, Copper or Pastboard lined, and this according as I judge, the part can bear.

The first Bandage next to my *Cerote*, makes an equal Compression by its three heads meeting over one another; the lowermost presseth the Influx from below, and with the help of its next fellow keeps the Bones together, and presseth the matter out of the Wound; and (by the help this middle hath of the uppermost) the matter is also prest out of the upper part of the Fracture and Wound to the Orifice, which also hinders the Influx from above, strengthened by a defensative lying under it. In the dressing these Wounds, you are onely to undo the middle Binder to come to the Wound, having a special care that this Bandage be neither too hard or slack, but indifferent, to the ease of the Patient.

Having thus proposed to you the vway of deligation, I shall now proceed to the last Operation performed in these Fractures of a Wound, vvhich is a commodious Position or placing of the Member; vvhich as I have told you in the Lecture of Simple Fractures, ought to have three Conditions.

Position  
of the  
part.

1. Soft, least the Compression offend the hurt parts, and cause Pain and Inflammation.

D 3

2. Equal

2. Equal, for if the Member be placed otherwise, it becomes distorted, and the Operation succeeds ill.

3. Lastly, It must ly higher then the parts next the Body, especially the first three or four dayes, for if it incline downwards, the humours by their own weight, will easily flow to the part afflicted. How this Position is performed, I have set down in the Lecture of Simple Fractures, to which I refer you.

The fractured Bones of the vvounded part thus restored to their natural places, and the Wound digested, and Inflammation and other Accidents gone off; you shall now unloose the Bandages, and take of your restrictive Medicaments, and apply the Emplaster *Castagmar*. in our *London Dispensatory*, or of these under-written over the fractured Member, which may add strength to the part, and further the Generation of *Callus*.

℞ *Resina, abietis, cera an. ℥ j. pulv. cort. Tilia*  
*℥ iij. succ. Geran. ℥ iij. cog. ad Cerot. consist.*  
 Or this;

℞ *Mucilag. radic. consolid. ma. visci pomor. & populi an. ℥ iij. succ. Geranii ℥ vj. lap. ostiocolia*  
*℥ iij. pul. cortic. Tilia ℥ ij. Vittel. ovor. N<sup>o</sup>xx.*  
*Terebinth. ℥ j. s. ol. Lumbricor. ℥ iij. cog. omnia*  
*bene permixta ad ceroti consistentiam, pro usu.* But  
 if you conserve the temper. of the part, you need not doubt of *Callus*. I commonly in these cases make use of *Emp. stict. Paracels. p. ij. Empl. Diacalcith. p. j.* over these a double Cloath dipt in red Wine, wherein hath been boyled some of the above mentioned Plants.

And now place the former Bandage again,  
 and

## CHAP. VI.

*A Fracture made by a Splinter.*

**I**N heat of fight at Sea, amongst the many wounded men that were put down into the Hold to me; one of them had his Arm extremely shatter'd, it was about two fingers breadth on the out-side above the Elbow, by a great Splinter.

This mans Arm I ought to have cut off presently, but a sudden cry that our ship was on fire, put me in such disorder, that I rather thought of saving my self, than dressing my Patients. I hastily clapt a dressing upon his Wound, and rouled it up, leaving his Arm in his other hand to support it, and endeavoured to get up out of the Hold, as the others did; I verily believing I should never dress him, or any of them more.

But our men bravely quitted themselves of the Fire-ship, by cutting the Sprizil Tackle off with their short Hatchets (which they wore during fight sticking in their Shalhes) we were freed of the Fire, and by our hoisting up the top Sails got free of our Enemy.

Now

Now I was at a loss what to do with this man, who lay not far off complaining of his Arm. I would have cut off his Arm presently with a Razor (the Bone being shattered there needed no Saw) but the man would not suffer me to dress his Arm; he cried, *it was already dress'd.*

The Fight over, we got into the next Port; I caused presently the Mariners Bed to be set up (which was four pieces of Wood nailed together and corded, and a Bears skin laid upon it, this was fastned between two Guns to the Carriages :) Upon this I see him placed, he was a lean man, above thirty years of age, of a good habit of Body; it was the right Arm, which I caused to be laid outermost, that I might the better come to dress it.

I having my dressings ready, I laid them orderly upon a small Pillow well stufft, and quilted in the middle. Upon this Pillow I first laid a soft double linnen cloath, then next I laid three Ligatures, then a Past-board wet in Vinegar, to make it more soft and plyant; upon that I laid a double cloath of such length and breadth, as might serve to encompass the fractured Member, this cut from each end to the middle into three Binders. Over the middle of this I placed a *Splenium* of cloath four double, four fingers breadth, and of such length as to give strength to the Fracture: Over this lay my Defensative, spread upon a thick Cloath of such breadth and length as to take in the whole Arm. Dressings thus laid upon the Pillow, I cut off the dressings from his fractured Arm, and placed the Pillow with these dressings close

and over those *Lamina* of Copper, or Tin lined ; or in the place of these, you may add those *Splenia* of double Clothes dipt in whites of Eggs, and wrung out hard, they will fit close to the part, and after they are dry, will support the fractured Member well.

But if it be in the Thighs, the Plates are best, that part requiring such as are of great strength and length, and such compass, as may take in half the Member, you are now to forbear the use of Suppuratives, and use such Medicines as are detergent, as the *Mundif. Paracels.* Or if you please

*Rx. Vinca pervinca, Pati, persicaria Beton. an. m. j. flor. Hyperici verbasci, an. P. j. rad. Aristoloch. utriusque an. ʒ ss. Thuris ; myrrha, sarcocoll. Iridis an. ʒij. coq. in vino albo addendo colatura mellis rosacei, q. s.* This may be cast in with a Syringe, it will deterge and incarn ; or by the addition of *Terebinth.* Wax and Oyl of *Hypericon*, you may form it to an *Unguent.*

If there be *Caries* you may make a Decoction of *Scordium, vinca pervinca, pucedanum gentian. cortic. Guaiac. Rad. Ireos myrrha* in Wine, and adding *sp. Vin.* or the *Extract. scordii.* If the *Caries* yield not to this, touch it now and then with some of the following Medicines by a Probe armed with Lint.

*Rx. Ol. myrrha distillat. per discentum & purificat. cum sp. Vini ʒ ss. olei cariophil. ʒij. ol. sulphuris ʒj. ss. m.* This will in a short time remove the *Cariosity*, afterward proceed by *Epsaloticks.*

*Vulnerary Potions* are here of great use : as this, *Rx. Aristoloch. rot. ʒij. fol. serpentaria, consolida utriusque Geranii Columb. sanicula an. m. j.* make them into gross Powder, & boyl them in Wine in a Vessel close stopt to a Gallon, give the Patient this, morn-

ing and evening ʒ iiii. at a time : you may give in this of *Osteocolla* ʒj. poudred, or in a draught of the Decoction of *vinca pervinca* made with Wine, for confirming and hastening the *Callus*; in the rest proceed as in the latter end of Simple Fractures.

A Souldier being shot by a Musket Bullet into the forepart of the Arm, near the *Biceps*, and out behind, the Bone fractured : I endeavoured by Extension to place the fractured Bone even together, but could not ; upon which I dilated the lower Orifice by a large Incision, according to the rectitude of the Member, to pull out those fragments of Bones which hindred their right Coaptation ; and putting my finger into the Wound to that purpose, I pull'd out a ragged piece of a Bullet, whether it was part of that which had passed through was the question ; some of the By-standers thought he was shot with a brace of Bullets ; but I rather think the Bullet was torn by the Bone, and that the other part was it which had made its way thorow : however by this extraction the main Bone was rightly placed, and the Shivers, with the Extraneous Bodies removed, and the matter happily discharged by this depending Orifice, and the Patient as happily cured by the common Intensions of curing these fractured Gun-shot-wounds.

Whereas if I had taken it for granted, that the Bullet was passed through, and contented my self in having endeavoured the reducing of the fractured Bones, and so dress'd him up, it had certainly Inflamed and Gangren'd : This confirms that doctrine in setting of Bones, that if any Bone will not be placed equally amongst his fellows, you ought to cut upon him, and take him out.

close by his side, so as I see his Arm laid as I designed upon my Restrictive, and his hand upon his Breast. Then I put my fingers into his Wound, and pull'd out a piece of a Splinter an Inch thick, or thereabouts, more or less, then Rags and Bones great and small; I left not the least shiver.

When I had so cleared the Wound of all the extraneous Bodies and loose Bones; I was amazed to feel what a distance or void space there was between the two ends of the Bones: But I proceeded and cut off the lacerated lips, which were of no use, and drest up the ends of the Bones with a couple of Dossils dipt in *sp. vin. & Mel. Ros.* vvarm, and the rest of the Wound I drest as vvarm vvith *Axung. porcin. Mir. praeceptat.* vvith some little *Ol. Terebinth.* mixt upon Dossils lightly within the Wound, and upon Pledgits without, and an Emplaster *Diacalcit. malanc.* vvith *Ol. myrtil.* over all the Wound.

Then I embrocated the fractured Arm vvith *Ol. myrt. & olivar. Immatur,* and a little *Acet.* and brought my Emplaster Defensative, vvwhich lay under the Arm, over the vvhole Arm, from the *Axilla* to the Elbow, and round the Arm close, only leaving a space to drest the Wound.

This gave a strength to the weak Member, and hindred the Influx from above. Just under this Emplaster there lay a *Splenium*, to answer that I applyed three more, one on each side, and another above, vvwhich four vvvere of such a size, as they lying a little off from one another, encompassed the Arm; they vvvere spread lightly vvith a little *Cerote, Axungie* and

and *Wax*, to make them adhere vvhhere I placed them.

Then I brought the Bandage vvhich lay under the *Splenium*, with three heads at each end, the lowermost of these took in the lower part of the Arm from the Elbow upward, vvith part of the Fracture, and was fastned on the outer part of the Arm; this prest the *Sanies* from below to the Wound, and hindred the lapse of matter that vvay. The middlemost was made to prest the matter out of the Wound, and keep parts close for union. The uppermost served for restraining the Influx, and prest that out vvvhich vvvas already in the part: this Bandage vvvas made vvith great moderation, and so fastned, as they might be loosened vvithout trouble to the Patient.

Then I brought the vvvet Pastboard close to the sides, and cut another piece to answer it, vvvhich I vvvet in *Acet.* and by the three Ligatures under, made them fast, but vvithout disturbance to the Patient. If it could not have been so put on, I should have forbore the use of them: the Cure of these consists in the easie dressing and quiet position, vvithout that you vvill not cure one of these compound Fractures; the Pastboard as it dryed, received a shape fit for preserving the Fracture in the position I left it, and that vvith a very slack Bandage.

Thus I finisht the first dressing, leaving my Patient in much ease, he slept pretty vvell that night, and vvvas the next day as vvell as I could expect; he vvvas let blood the second day, and kept to a spare Diet, but vve allowed a little

Wine



Wine as a Cordial to all our Patients.

The third day I drest again, took off the upper paste-board, and loosened the Heads of the main Bandage, took off that Splenium which was over the Wound ; raised up the emplaster from the wound , took out many dossils , found it warm and well-disposed ; drest it up quick with my Suppuratives hot , and an emplaster as before, not stirring the restrictive ; made now a compress more particularly for the wound , purposing not to remove the two outer heads of the main Bandage, unless it were sometime to give a little breathing to the member ; but the middle I open'd as often as I thought fit to drest the wound, the other two had short *Splenia* to make the Bandage equal, but I was not then satisfied how this Arm would be supplied with Bone, yet my Patient was easier then any of my Patients with fractured wounds.

When it came to my turn to be visited by my Brother Chirurgeons of our Squadron , they did not dislike the wound nor my way of dressing, (for we being used to see one anothers Patients, had all much one way of dressing) but they laught at the excuse I made for not cutting off his Arm, and doubted I should yet be forced to do it. But I kept my Patient flat on his back, and that after a while was his greatest pain, for the Wound digested and the tumor was never considerable.

After the wound digested and a separation made of the contused flesh ; I then renewed the dressings , taking all off and fomented the member with vvarm vvater , to give a  
breathing

breathing to it, and applied a catagmatic Emplaster, and drest the Wound vvith a mundificative Parac. or such like, and bound up the Member as at first, and so continued my way of dressing as I see cause, putting into the Wound only a Dossil or Tent made upon a skewer soft and hollow to give vvay to the Wound to incarn, I scare ever using Injections, but by gentle compression assisting Nature, who seldome fails in supplying the lost substance in Wounds, if we disturb her not by improper applications.

The next opening and dressing of this fractured Member was occasioned some sixteen or seventeen days after, by a troublesome Itching of the patt; which was I suppose partly from his liberty in diet, the heat of the weather, and want of perspiration: I then took off the Dressings, and bathed with Sea-water, and drest him up with Emplaster *de lishargiro*; the Wound was about this time well incarned within, and the Lips beginning to cicatrize from their edges, I dressing them with *Epulosicks*, as *ung. Tutia*, &c. yet I kept my Patient still upon his back, and renewed not the whole dressing until I was necessitated, which was about the fift or sixt week.

One day coming from the Shore (vvhere those of our wounded had liberty to lodge if they desired it, and vvere drest by us there) I found this Patient vvith a heat all over his body like an *Erysipilas*, he was much frightened at it, he had it seemed drank Wine a little too liberally vvith his mates, (as they would most of them do if they vvere any

any thing vvell) unless it rather proceeded from a generation of *Callus*, in which case it usually happens. I let him blood, and at next dressing finding his Arm pretty strong, and his Wound healed within, and in a fair vvay of cicatrizing, I raised him up, after he had laine about eight vveeks. All vvvhile I believe he never stirr'd his Arm from the time I placed it, but in the time of renewing the dressing, he being the most patient man in that respect I ever attended; and in truth vvithout that submission, he could scarce have been cured.

*Erysipelas*  
upon the  
generati-  
on of *Cal-  
lus*.

There vvvas in this Patient a strong *Callus*, filling up the void place of the lost Bone at least two Inches, vvith little or no shortning of the Arm; but the Joynt of the Elbow vvvas so stiff from the position it lay so long in, that he could not stretch that Joynt whilst I knew him, vvvhich vvvas until that Ship vvvas cast away.

My memory vvill be much cryed up for remembring so many particulars in a Patient, so many years since cured by me: But if you consider how remarkable a case it vvvas, and in my Trade, there vvill be the less vvondering at the possibility of it. You may enquire what vvvas done by me in the Cure of Capt. *Reade*, vvwhere the loss of his Jaw vvvas supplied by a strong *Callus*, and that Cheek uniform vvith the other, and vvill be long remembred by the then standers by, though not of the Profession.

In our Sea Fights often times a Buttock, the Brawn of the Thigh, the Calf of the Leg

Leg are torn off by Chain shot and Splinters; all these are contused Wounds and look black, and do too often deceive the unexperienced Chirurgeon, he taking them by their aspect to be gangreen'd, and by dressing them as *Gangrena*, vvith *Egyptiacum* and *Spirit of Wine*, hath either gangreen'd them, or drawn the other Symptomes upon them of Pain, Fever, Delirium, Convulsions and Death.

Whereas if they be considered rightly, though they look as flesh long hanged in the air, of a dry blackish colour, yet they have vvarmth, and vvill by Lenients, as is prescribed in Simple Gun-shot-wounds, digest, and as Separation is made they vvill deterge and incarn, but they are slow in digestion, and require good Fomentations and Embrocations to cherish the native heat, vvhich is much vveakned by so great a loss of substance.

These require *Oleum Terebinth.* to be mixt vvith your digestives, but you must have a care you do not inflame and cause Pain, by adding too much of it. A spoonful to six Ounces of your Suppurative is enough in the dryest habits; your Judgment vvill best direct you, and your Patients complaint: it being unreasonable to hope that Wounds can digest, vvhile they are accompanied vvith much Pain.

In the former Sea-fights vvith the *Dutch*; Capt. H. had his Hand shattered, and his Fingers torn off; Mr. L. was his Chirurgeon; who entreats me, being call'd into counsell, not to think of cutting off his Hand; I told him

it vvill be of small use to him, and the Shivers of the Bone vvithin hurting the Nervous parts, occasioned those convulsive twitches and pain he was subject to and often felt; notwithstanding I promised to comply with him, if he vvould follow such Methods as I vvould propose, vvhich he agrees to, but does not perform accordingly.

I came two dayes one after another, but finding nothing of it done, at the next meeting he pretends an Excuse, not to dress the Patient. I then discover his craft, and that he had used me onely to defend his Credit, which was questioned for the not taking off the Hand at first, as he ought to have done, of vvhich he now saith I vvvas the cause, having craftily drawn me in to be of his Opinion, though conditionally only; *viz.* that he should have laid open the Hand, and taken out the Shivers, which if he had done, he might have cured it, as I have done some others, as appears by this Treatise. Of the truth of this Mr. H. is Witness, who also was over-witted by him. The Chirurgeon of the Ship committed the first error, he ought at the first dressing, while the Wound was recent, to have pull'd out the Shivers of Bones, or to have extirpated the hand, that being the proper time.

## CHAP. VII.

*Gun-shot-wounds in the Joynts  
with Fracture.*

**T**HE Wounds of the Joynts are subject to more grievous Accidents, than those I have heretofore mentioned, therefore they require your more particular care. The Tendons and Ligaments being inserted near the Joynts for the motion thereof, as also the Membrains, and consequently the parts of a most exquisite sence. The trunk of Nerves also in every great Joynt passeth through for the use of the Member that is beyond it. To which I add, that the part being exanguious, the natural Balsome of the Body is here more sparingly supplied for the help of the Cure.

What the pains are may be judged by the Wounds in the lesser Joynts. Capt. F. in *Mus-selbrough* fight, was shot in one of his Fingers, and the next day so grievously tormented, as he walkt up and down like a mad-man, could take no rest until his wounded finger was digested, yet his pain was not so great in his Wound, as in his well fingers. The greater Wounds are attended with much more vehement Pain, Inflammation,

Inflammation, Dilirium, Convulsions, Gangreen, and are commonly deadly. Therefore the shot is presently to be extracted, and dressed with such Medicaments as may defend them from putrefaction, and these are to be moderately hot and dry of subtle parts and *Anodyne*; as *Ol. Terebinth. de Castoreo scorpion. vulpin. lumbricor. ovor. & pul. scord. Thyris myrrha, Ter. lemina pul. euphorbi.*

And in these Gun-shot-wounds the Orifices of the Wound must be kept open, that your Medicaments may penetrate to the bottom: But if the Wound be on the inside of the Joynts, they are commonly attended with great Hæmorrhage: For prevention of which, I refer you to its proper Chapter: And in the first place propose this digestive.

*R. Tereb. lot. in sp. vini ʒ iiij Thuris, myrrha mastich. an. ʒ j olei Hyperici ʒ iiij. visell. ovor. N ij. croci ʒ ij. Or,*

*R. Terebinth. ʒ ij. myrrha, Thuris, corn. cervi asti. à ʒ iiij. Ol. scorp. de Castoreo lumbricor. sambuci an. ʒ ss. visell. ovor. N ij. Apply either of these warm. If stronger be required,*

*R. Ol. Terebinth. ʒ j Ol. hyper. cum gumum. ʒ ij. euphorb. pul. ʒ j. drop this very hot, and apply the first mentioned Digestive over all Embrocate parts about well with Ol. lumbricor. & hyperici, and apply this following Cataplasma.*

*R. Farina, Hordei & fabar. an. lb j. flor. cham. Meliloti ros. rub. scordii Absinthii pulver. an. ʒ vj. Decoct it in the Broath of Offal or in Oxymel. adding Ol. Ros. & chamelamel. Or this,*

*R. Mucilag. Radic. Althæa consolid. ma. an. ʒ iiij. flor. Ros. rub. beton. cham. subtil. pul. an. ʒ ss. fa-*

*rina lini. fenug. an. ʒ iiij. farina, hord. & fabar. an. ʒ vj coq. in vino, adde Ol. Ros. & Lumbric. an. ʒ j. fs. Mel. ʒ ij. vitel. ovor. N iiij. The Wound digested, you may deterge with this :*

*R. Farina Orobi ʒ j s. Thuris rad. Ireos. an. ʒ vj. succi Apii ʒ iiij. Mel. com. & Terebinth. an. ʒ ij. m. F. ungu. The Wound deterged, you may dress with this Sarcotic.*

*R. Summat. Hyperici equiseti plant. Beton. an. p. j. rad. consolid. ma. Tormentilla an. ʒ iiij. sem. Hircini ʒ iiij. lambric. terrest. lot. ʒ ij. Ol. mastichina ʒ ij. vini odonf. qs. coquantur ad consumptionem vini postea colentur, cum forti expressione, dein. adde Resinae pini ʒ j. Thuris, Myrrha, Mastich. Aloes, an. ʒ ss. cera ʒ iiij. m. F. s. A. Ol. Aparici is excellent in these Wounds alone, or heightened by any of the former Prescriptions ; so is the Balsome in the Chapter of the wounded Nerves.*

If the Bone be bare, you must be careful that you do not foul it by your greasie or slabby Medicaments ; you must here also consider of *Phlebotomy* and *Universal Regiment*. If Pain be violent, and yield not to *Anodynes*, cut off the affected Tendon, and whatsoever corrupts, least it taint the rest.

But in these great Wounds, you are at first to consider how curable they are, and endeavour to preserve the life of your Patient, by a timely extirpation, before his Spirits be too much exhausted : Of which this following story will give you warning.

A shot  
through  
the Knee

A Page of Lieutenant Gen. D. L. was shot through the Knee, the Bullet entring in by the



the lower and outer side of the *Rotula*, passing through the Joynt out in the hollow of the Ham, tearing the Ligaments and Nervous parts, fracturing the Joynt as it passed, and rending the *Artery* in going out. This Wound was mortal the very minute it was inflicted, and ought then to have been dismembred: But such Proposals will not usually be admitted of in the first Dressings, whilst there is hopes: Yet the Accidents in these great Joynts thus made are sudden, from the vehement pain. And while *Fever*, *Delirium*, &c. are upon the Patient, then to make such an Amputation, most commonly hastens his death.

Wherefore I propos'd my first dressing by digestion upon a *Pledgit*, apply'd warm to the Wound upon the *Rotula*, there being no place for a Tent; and to enlarge the Wound amongst the Tendons and Ligaments, were to adde one mischief to another. I also embrocated the parts about with *Ol. Ros. cum Aceto*, applying my Restrictive over all.

In the depending Orifice, there was a throbbing of the Arterial blood, as in an *Aneurisma*, the blood being choakt in by the contused flesh, it therefore was not there to be tented, for fear of making a Flux of blood, nor yet could we endeavor to stop the bleeding by Cautery, Actual or Potential, least thereby new pains should be stir'd up, that part being full of Ligaments and Tendons.

Wherefore I dress'd that Wound with the same Digestive mixt with *pul. Galeni* upon a thick *Pledgit*, and some of the same Restrictive over that, with such Bandage as that Joynt was ca-

pable of, hoping this way to hinder the Influx of humour, and that by such dressings the Wound would digest, but the pain continued vehement, and yielded to no Application, nor was there any possibility of conveying any Instrument into it whereby I might pull out the shivers of Bone.

Mr. *Penicuke* formerly General Chirurgeon to the Scottish Army, was with me at the dressing this Patient, but proposed no alteration of what I had done, the pains increasing, a Fever was made and attended by *Dilirium* and *Spasme*, Death followed, as commonly it doth in all such Wounds of the great Joynts. I could instance it in many, but the late case of Sir *J. L.* may serve for all; his Wound, as I have heard, was of the *Rotula*, he had many of our most ancient Chirurgeons, with the most eminent Physicians to help them, Persons who were well experienced in Chirurgery, yet they had no better success. Therefore at Sea while they are warm with heat of Fight, we dismember them, and by actual Cautery stop the Flux of blood,

## CHAP. VIII.

*Wounds of the Belly.*

I Have now briefly run through the Parts not principal; and purpose to say somewhat of the principal Parts, as the Belly and Breast. And that you may more certainly know the part wounded, I shall give you a short Description of them; and then shew how they are to be handled in order to their Cure.

The Belly is called *Abdomen*, or *Inferior venter*, it begins from the bastard Ribs, and extends it self to the Groins, and is divided into three regions by our Anatomists: The upper, middle, and lowermost. The uppermost is called *Epigastrium*; the middle *Regio Umbilicalis*; the Inferior *Hypogastrium*: The sides of the uppermost are the *Hypochondria*; the right *Hypochondrium* possesseth all the Liver; in the left is the Spleen, between these is placed the *Ventriculus* or Stomach. In the middle part

*Abdomen*  
described.

of the *Abdomen* is the Navel, round about which ly the Guts, and behind those, on each side the Kidneys. In the sides of the Inferi-  
or part are the *Ilia*, the *Pecten* or *Pubis* in the middle, under which lyes the Bladder. Thus much to the Internal Delineation.

The *Abdomen* consists moreover of parts containing and contained.

Parts containing or teguments of the *Abdomen*, are either the common, which reach all over the Body, as the *Cuticula*, *Cutis*, *Pinguedo*, *Membrana Carnosa*, or the particular and proper to this place, which are the Muscles of the Belly the *Peritoneum*, and in respect of the Guts, the *Omentum*. The parts contained are some of them designed for the nutrition of the whole Body: others for Expurgation; and others for Generation.

The *Stomack*, *small Intestines*, *Mesenterium*, *vena porta*, *Cava*, *Arteria magna*, & *Celiaca magna*, the *Liver* and *Spleen* serve for Nutrition: The *Bladder*, *Gall*, all the *Intestines*, but especially the great ones, *Kidneys*, *Uters* for Expurgation; and for Procreation *Vasa preparantia* & *differentia prostatica* & *uterina* in Women. Which parts containing and contained are subject to this Gun-shot, whence various *Species* arise of these Wounds, sometimes the containing parts; as *Cutis*, *Pinguedo*, *Caro musculosa* onely are wounded, so as neither the *Peritoneum*, nor the other Internal parts suffer any hurt.

Wounds not penetrating. And this hapned to many in Service, who have been brought to me as mortally wounded; whereas I upon search have found

found the Impression only upon a greazy Leather Jerkin, or their Bellies black or a little scratcht by the Bullet: In others the skin and flesh wounded and no further, these latter are call'd Wounds of the Belly, not penetrating, and are cured as Gun-shot-wounds in fleshy parts; in which cases all those things are approved of, which have been delivered in simple Gun-shot-wounds.

But this I must take notice of to you, as having often observed, not onely in Gun-shot-wounds, but in abscesses of the Belly, that from the laxity of the parts, they are subject to great defluxion, especially in the circum-jacent Muscles: to my late vexation, whilst I was writing a rude draught of this Chapter, the matter flow'd out upon us, Dr. S. Physician, Mr. Gin. and my self Chir. from various *Sinuses* raising up the Muscles, insomuch that the more we laid them open, the less hopes we had to effect our Cure. The particular whereof I shall give you in another place, with more of that kind, enough to shew you the laxness of these parts, which is the greater, because we cannot make such Bandage here as elsewhere, by reason of their figure, scite, and perpetual motion.

These thus briefly considered, we pass to the other *Species*, for the Bullet is for the most part carried with such force, as it not onely wounds the fleshy parts, but also pierces the *Peritoneum*, hurting most an end the Internals. It being indeed impossible that the Bullet piercing the parts containing, should miss the contained which are soft and tender.

Wounds  
penetra-  
ting.

I have seen sometimes in the Wars, a Soldier shot scarce to the *Peritonæum*, yet the contusion hath been so great that the *Peritonæum* hath come of upon digestion, and the Bowels in these commonly labour under Cholicks, and the Patient is troubled with difficulty of breathing.

If the Bullet penetrates through though no further, yet the Contusion makes foul work and requires speedy relief. But if it hath wounded the Internal *Viscera*, then you are to consider what the parts are that are wounded, whither the Liver, Stomach, or which of the Intestines, which you may apprehend from the scite of the part, and the accidents accompanying such Wounds, and by the proper symptomes of each part.

Signs of  
the  
Wounds  
of In-  
ternal  
parts of  
the *Abdomen*.

According to *Celsus*, *Lib. 5. Cap. 26.* The Liver being hurt, there follows an Effusion of a gross blood; if the *Porta* or *Vena Cava* be hurt, the right *Hypochondrium* is oppressed: If the *Artery* be wounded, the blood is florid, and with Impetuosity leaps forth, and death follows. But if the Stomack, Singultus or Hiccup, with Vomiting and Nausea, and his sustenance comes out of his Wound, with the Chyle, cold Sweats, and the extreame parts cold: Of the Intestines, if the lesser be wounded, poraceous Vomiting, what he eats or drinks, will pass out of his Wound in less then half an hour.

If the great Intestines be wounded, the Excrements and filthy smell will demonstrate it: If the Wound be of the left *Hypochondrium* under the short Ribs, you may conclude the Spleen wounded,

wounded, and the blood floweth forth with great Tension of the *Hypocondrium*. If the Kidneys, the Wound is in the region of the Loins, near the *Vertebra*, under the *Diaphragma*, and the more certain sign is, if the pains reach to the Groins and Testicle, with difficulty of Urine mixt with blood, or pure blood voided by the bladder: If the *Uriters* be wounded, the Urine comes out of the Wound: If the Bladder be wounded, that part of the Belly is tense, pains are stirr'd up in the Groins, and the Urine is discharged by the Wound, and the Stomach suffers by consent, and the part wounded demonstrates it: If the Womb be wounded, vehement pains reaches to the Groins, and the *Coxa* and the Blood not only flows by the Wound, but *per Vulvam* they are troubled in mind, with other shrewd symptoms of death,

For what concerns the Presage of these Gun-shot-wounds, if they be only in the region of the Belly, they are not without peril, and much loss in the middle, where the *Linea Alba* is; but if they penetrate, (as you may know by the signs forementioned) there is great hazard, seldome parts so shattered recover. What I have here seen from a man discharging his Excrements from the Colon on the left side, and heard of other like of the Stomach, are rather Miracles, then the work of the Chirurgeons; but he was happy that had the managing that Cure.

Prognosticks.

If *Celsus* in his time determined these Wounds mortal by cutting Weapons, how much more must they be such that are made  
in

in our age by Gun-shot; Yet Nature, as one saith, *in his Vulneribus, Sape miracula facere solet*, is often as merciful and miraculous in the Cure, as the blow was cruel.

Cure.

In order to the Cure, we must begin with the Extraction of the Bullet, least it sink in to the most inward parts, and by its hardness offend the Bowels, as also the rags carried in with it, least it beget Putrefaction. Then we are to reduce the Omentum and Intestines least they be Inflamed and altered by the outward Air: but in these Wounds they do not often fall out, unless it be by Splinter, or great Shot. Then *Hemorrhagia* is to be staid, and Inflammation allay'd, and we are to resist Putrefaction, by bringing these contused and lacerated Wounds to digestion.

The Intestines and Omentum are disposed to reduction by warm discutient Fomentations; but if there be not an opening large enough, you must enlarge the Wound. If the Omentum be corrupted, make a Ligature below that corrupt part to cut it off, leaving the Ligature upon the rest to fall off by digestion.

If there be *Hemorrhagia*, you must inject such Medicaments as have a Refrigerant and Astringent quality, and those may be *Aq. urtic. plant. spermatis Ranar.* with *Syr. de Ros. sicc.* with *pul. Bol. Armen. ter. sigil. sang. dracon. Aloes, Thure*, making a mixture of some of the same Pouders, with a new laid Egg, with *Ol. Mastich. & Lumbricor.* and apply it upon a Tent fastned to a thread, as is before described, and apply the rest upon a Stupe over all.

But

Wounds  
of the  
Stomach  
and Guts,



- But if there be no Flux of Blood, digest as fast as you can.

*Fallopins* hath recommended to our use this, by the use whereof he cured a Wound in the Stomach and Intestines.

*R. Fol. Pilosella plantag. rad. Tormensilla consolid. maj. flor. hypericis*, these were decocted in red Wine; in the latter end of the dressing adde a little *Manna, Thuris, ol. Mastich. resin. Abiet. Terebinth. Cypria, croci & verm. terrest.* the Wound within to be drest with this.

If there be Putrefaction, you may use such Medicaments as are fit in that case, but those dye in great pain: In all these Wounds of the Belly, to stop fluxes of Blood, I use such like Medicaments as I have proposed, and apply to the Wound it self Digestives, as in simple Gunshot, and by good Fomentations, Embrocations and Cataplasma's, cherish the native warmth of parts.

In Wounds of the Kidneys, you are to inject such Medicaments as have an Abstersive and drying quality as *Radices, consolida, Iris, dis, Aristoloch. rot. and maj. myrtil. caude equin. plantag. Balanst* these decocted in *aq. chalybeat.* adding after some Wine, and *Mel. Ros. digestivum Terebinth. & Integ. ovum* with a little *Terra sigil. Thus & mastich. & ol. Hyperici*, with *Emp. diacalcith. malaxt.* with *ol. Ros.* and a *Cataplas.* of *far. Hordei. fabar. & orobi* decocted in *Oxymell.* adding a new laid Egg to it, with *Ol. Ros.* to be applyed over all.

If the Liver or Spleen be wounded, there will be great Flux of Blood, in which case I offer this to you.

*R. &c.*

Wounds  
of the  
Kidneys.

Wounds  
of the Li-  
ver,  
Spleen,  
&c.

*Rx. Plantag. pentaphyl. polygoni Mille-follii ; myrtil. Ros. rub. to these you may adde Thuris, sang. dracon. Bol. Armen. Acacia*, boyled in water chalibeated, adding a little red Wine, and *syr. de Ros. succ.* This may serve for an Injection: if the extravasated blood fall down into the Cavity of the Belly, you must leave it to Nature.

Thus you are to dress all the Wounds in particular parts of the Belly.

The Wounds of the Womb are accounted deadly, the very least of them: and so are all these made by Gun shot, yet you are to proceed in the universal regiment with Glysters and Bleeding, and by good Vulneraries: there Diet here is to be medicated, and all endeavors to dispose parts to sanity, if it were possible.

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## CHAP. IX.

*Gun-shot-wounds of the Tho-  
rax.*

**A**Mongst the principal parts which are subject to this divelish Invention *Gunshot*, the middle *Venter* or *Thorax* is numbred with the parts contained in it, viz. the *Heart*, *Lungs*, great *Artery* and *Vessels*, with the *Mediastinum*. The difference of these *Wounds* is as in those of the *Inferior Venter*; sometimes it doth not penetrate into the *Cavity*, so as the *plura* is not hurt: Other times it doth penetrate through the *Membrane* and *Costæ*, in which case the principal *Viscera* are wounded or not wounded.

If the *Wound* do not penetrate into the *Cavity* of the *Breast*, but be only in the mus-  
Not pene-  
trating.  
 culous flesh, it shall be cured as *Wounds* in the fleshy parts.

But if the *Bullet* hath penetrated into the  
Penetra-  
ting.  
*Cavity*, it may be easily discerned by the *Laceration* of the musculous flesh, and commonly by the *Fracture* or *Perforation* amongst the *Ribs*, whereby the *Wound* is left  
Signs.  
 open, and the *Spirits* and *Air* pass out vvith noise; and if the contained parts be wound-  
 ed,

ed, there vwill follow a Flux of blood by the Wound or Mouth, or by both, unless the blood fall down upon the *Diaphragma*, and then the Symptomes of the difficulty of breathing and such like Accidents, vwill more demonstrate its Penetration. And if the Lungs be wounded, a Cough, with difficulty of breathing, and flux of blood, and sighing often, and a ratling in the *Aspera Arteria*, the Patient inclining to ly much upon the Wound. If the Heart be hurt, the blood flows vvith impetuosity and reeking hot, their Pulse languishes, cold sweats follow, and they dye.

The *Diaphragma* hurt, draws upwards, the Spine is grieved, very difficult breathing, and unequal and painful, vvith a hoarse Cough, and great pains about the false Ribs.

If the great Vein or Artery be hurt, a terrible Flux of blood follows; if it flow from the right side, it is the *Cava* is hurt; but if from the left side, we suppose it the Artery, you vvill discover it by its saltation and florid colour. The *Aorta* wounded, that Patient dies at the instant.

If the *Spinalis medulla* be vvounded, the Nerves are resolved, and a Palsiey follows, more immediately in the part under the Wound. Almost all these Wounds are mortal, they generally dye. But it is not consisting vvith Religion or Humanity, to leave them without help. And for that I have happily prolonged the life of some, and have known others that have recovered of  
some

some of these wounds, in the Lungs and less noble parts thereof. I shall therefore proceed to deliver you what concerns their Cure, both as to the Internal concerning the wound it self, and to that which relates to the Contusion and Inflammation Externally, to prevent flux of humors, and facilitate the discharge of Bloud and Matter contained in the Cavity of the *Thorax*. You are in the first place to draw out the Bullets and Extraneous bodies, amongst which sometimes a part of the Ribs are carried in: All these are to be removed, and the place cleared of shivers, lest they prick the membranes, and thereby hasten ill accidents which attend these wounds. You are then to dress the wound with a Tent dipt in this or such like, *Rx. Bol. Armen. Corn. Cerv. nst. Ol. Ros. & Sambuci, Farina, Volatilis*, and with *ovo Integ. Misce*; spread a compress with some of the same, and apply it over the wound: If the bloud stop not by this dressing, then it may be proper for you to Inject some astringent decoction, which is otherwise than was advised in wounds made by puncture: For in Gun-shot-wounds the orifice is wide enough for the Injection to return out again; insomuch that not only the Astringent intentions ought to be pursued, but also the Deterfive; here being loss of substance and putrifaction. Therefore boil in *Aq. Ger. querc. Fol. Plantag. Ulmi, Urtica, Vinca, Peruvinea, Ros. Rubr. fol. Myrril. & Balaust.* adding a little *Bol. Armen. & Mastich. Syr. de Symphyto qf.* and if more astringent be required, boil it in *Aq. Fabr.* Having thus quieted the bleeding, you are to dress with this digestive, *Rx. Terebinth. Lot. in decoct. Hordei ʒij. Pul. Thuris, Myrrha, an. ʒij. Sem. Fanug. p. ʒj. Ol. Hyperic. qf.* dress with a Tent dipt

dipt in this, then apply over it a Pledgit, with some of the same, or with some of your Suppuratives, as in simple Gun-shot-wounds is prescribed, and Embrocate the breast and parts about with *Ol. Amygdul. & Lumbric.* with *Ung. Dialth. m.* and an *Empl. Diach. simpl. cum ol. Lumbric. dissol.* and after digestion you are to Inject such medicaments as have power to deterge, and are more resolvent, whereby the Matter is disposed to be discharged by the wound; and to this purpose extract. *Scordii* dissolved in Wine, with the addition of *Mel. Ros.* is proper, or decoct. *Pilosella, Cande Equina, Plantag. Tormetilla, Consolida, Aristoloch. Rot. Rad. Iridis, & Sarcocolla,* these boild in *Aq. Font.* adding Wine to it, with *Mel. Ros. q.* and then you may dress the wound with this *Munda. R. Terebinth. ʒij. Farin. Hord. Cribrat. ʒj. Thuris, Sarcocol. Rad. Iridis, an. ʒiij. Mellis Ros. ʒiiij. Misce S. A.* You may dip your *Canula* or Tent in this, and dress the wound in the fleshy parts with the same. The wound deterg'd incarn and cicatrize, as is said in other wounds, but keep a *Canula* in it, until it cease to run. *Celsus* proposes, that in all these Internal wounds the outer parts be vesicated, to draw off humors more powerfully from within, and the medicament he proposes thereto is, *Sal bene contritus cum cerato mixtus, quia leviter cutim erodit, eoque impetum materia quo pulmo vexatur evocat.* This his proposal may be proper in wounds made by sharp weapons, as by Arrows, &c. But here in these wounds there is vexation enough outwardly to make a revulsion, if that signified any thing. In the dressing these wounds you must be careful to cut off the sloughs without, lest from them a stinking Gleet distil upon the *Viscera* within: And in order

order to the cure there is required *Phlebotomy* according as the Patient lost blood by his wound: Here are also Clysters required to keep the body open, and the more temperate: Pectoral decoctions are here proper, such as is in the *London dispensatory*, omitting the hotter Plants; to them may be added *Syr. violar. de cichor. de liquerisia, Zujub. Capil. Ven. de symphyto, & Lohochs*, and such as may take off the harshness which the *Aspera Arteria*, and *Bronchia* are subject to. Their diet is to be slender, and medicated. *Hydromel* is a proper drink in all these wounds, and may be medicated with agglutinatives and pectorals added to it, and after Fever and such like accidents are diminished, Asses and Goats milk is necessary, yea a diet of Cows milk alone, or mixt with distill'd milks, and sweetned with conserve of Roses; but this will be a work for the Physician a-shore.

From the defeat of the Scotch-army near *Dunbar*, there came many of the wounded to *St. Johnston*, and amongst them there was several wounded into the Breat; they who were so shot as to have the Ribs broken, were in extream pain from the shivers, whereas those whose Bones were not hurt had scarce any pain at all, but what proceeded from difficulty of breathing and coughing: A stinking *Sanies* issuing out both before and after the separation of the sloughs in great quantity; in one a very great proportion daily, of a brown thin Matter, of a rank smell; none but this died under my hands; they after some while retiring to their homes, where (as I have often heard them say) their Leeches performed great Cures, by vertue of their Plants which they gave Internally, and with Fats they made Balsams of; yet I believe most of these died *Tabid*.

## CHAP. X.

*Of Symptomes of Gun-shot, omitted in the Fourth Chapter.*

**T**He Symptomes attending Gun-shot, as you have read already elsewhere, are *Pain, Fever, Delirium, Syncope, Phlegmon, Erisipilas, Gangrene, Convulsion & Palsie*. The Pain proceeds from Inflammation or Phlegmon or Erisipilas, which I have elsewhere purposely treated off, as also of Gangrene; The Fever is Symptomatical, so is the *Delirium*, & will go off with the Pain, but may with the forementioned be relieved, by bleeding and Lenient purgatives, such as I have mentioned, and to fortifie the Spirits against fainting, which proceeds from putrid Vapours and Pain which may affect the part, there are Cordials and *Epithemata* already taught, so that there remains only *Convulsion* and *Palsie*.

Convul-  
sion.

*Convulsion* is an involuntary contraction of the Nerves to their Original, by which contraction the Member is also drawn up, and is said to be caused of Repletion and Inanition; In this our case it ariseth from putrid Vapours or Acrid matter offending the Nerves, which is often found in these wounds; The part affected is the Brain, which being thus provoked causeth an involuntary contraction and rigidity of the Members. In parts dismembred, as near the Knee or Shoulder, there the Contraction cannot be discerned but by a trembling,



bling, which trembling is usually attended by a *Convulsion* of the Jaws: It likewise follows great Inflammations, especially in the Nervous parts; The Prognostick here is always Fatal, they being the forerunners of death. In the Wars I was called to see a poor Souldier who had his Arm thor off, near the Shoulder, his Chirurgeon drest him with *Egyptiac*, as for a *Gangrene*, from which sharp dressings great Pain followed, with shivering of the Stump, Inflammations and Gleet, but no change of Colour in the skin, he had roared some days, through the vehement pain; I drest him up with *Anodynes*, as Linement *Arcei cum vitel. ovi*, fomented the part with *fol. malvar. violar. caps. barbar.* decocted in *latte*, and with Lenients Embrocated, as with *ol. Lumbricor. & exped. Bovinis*, and applied Empl. *Diapalma cum succis* over all, and anointed parts about, as Neck and Spine with *ung. Nervin.* and blistered the Legs and Thighs, but it was too late; he died howling.

Observation.

*Paralysis* or *resolutio Nervorum* is generally defined a privation of Sense or motion or both, in some part or parts, and affects the Brain & *spinalis medulla*; But in *Palsies* which arise from wounds, the parts immediately affected are the Nerves of that part only, this doth not take away the life of the Patient, though it may sometimes threaten a Mortification through the resolution of the part. In a Sea-fight an *Irish* Mariner having discharged his Gun which was hon-combed, and loaded it suddainly again, whilst he was ramming in a Carthage, the powder took fire, and shot the Rammer out of his hand, it did tear the Palm of his hand, and some of his Thumb and Fingers: The wound was not considerable, but it extinguished both Sense and Motion of

Observation.

the Member. I drest him up with our common digestive, of which at such a time we had great quantity ready, and over all a common Restrictive, so rouled him up, there being then no time for bleeding; But after the fight I let him blood, and the next day or two Purg'd him, and Fomented and Embrocated him, with *ol. Lumbricor. Cham. Aneth. lilior. ung. Nervinum*, and such like I suppose, and did all that we Chirurgeons of the Squadron thought fitting, but without success; one night lying a-sleep in his Hamock, he was awakened by the wet he felt, and got up to a Candle, and found the dressing upon his hand all bloody, as also his belly whereon it lay: I was called, taking off his dressings, found the palm of his hand and fingers gnawed by Ratts, they had eaten through his oyl'd clothes, and had knaw'd his hand more if he had not wakened from the trickling of his blood. I drest his wound with my digestive; purposing not to hasten its cure. I supposing it might be a help to his recovery. I after the cure of this made him a Fontanell in that Arm, and bathed the Member, Cupt and Scarified it, and afterwards used Emplasters of Pitch, to stir up a heat in the part; but he was a young man and otherwise of a strong Constitution, and out of hopes of reward for his lost Arm, he hastened away to *Madrid*, and at his return had more use of it: These *Paralyses* do often happen in great Contusions, and after dislocations in the Shoulders, I could instance it in several. Dr. *T. C.* and Dr. *T. W.* did both see it in a Lady who had dislocated her Shoulder. I was sent for, and by the help of her Servants set it presently, and she so well the next morning, as Sir *W. G.* then present scarce believed it had been out; I was dismiss'd, but within a month

month after she was so Lame, as it was doubted, whether the Bone was Set or not. A Bone Setter was sent for, who at a time in another person pretended he had set so many Bones, where none were dislocated or broken. This man, I being present, acknowledged that the Bone was well Set; but had I been absent, he would have delivered otherwise, and by new Extension have rendred the part Incurable.

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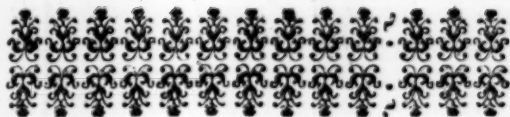
To

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AN  
APPENDIX  
TO  
The Treatise of  
*GUN-SHOT-WOUNDS.*





## To the Reader.

**H**AVING thus finished the Discourse of Wounds, I considered with my self that my design was to help the Sea-Chirurgeons, who seldom trouble their Cabins with many Books. I therefore thought it convenient to make this little Treatise as comprehensive for their use as I could, by making it contain all those things which may easily be foreseen to be of use to them. Now besides Wounds, we know by our experience that Burnings by Gun-powder and other materials do too frequently happen at Sea : and also by Ill dressing of Wounds Gangrenes and Fistulæ arise, and withal much the sooner, if broken Bones, especially those with Wounds, be not well brought together and so held : The ease and life of the Patient consisting in the well handling and ordering of them. All which matter we occasionally handled in the foregoing work,  
yet

yet not so much, but that for their fuller Instruction I thought it requisite to anticipate something of other Discourses, I intend for the Press, by the following Appendix, which if well perused may perfect the Chirurgeon in what remains to be known concerning Wounds, and save him the labour of reading many Authors.

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AN

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AN  
APPENDIX  
TO

The Treatise of

GUN-SHOT WOUNDS.

CHAP. I.

*De Ambustis*, or Burning.

**F**Orasmuch as it often happens, that in close fights at Sea men are sometimes burnt by Gun-powder by their Enemies, and by various accidents amongst themselves: I shall therefore deliver to you the most plain way of curing them. For however people cry 'tis nothing to cure a Burn, yet by what I have seen of these Cures from Country or City, they are often very ill

ill performed. Whether they are Burnt by Gun-powder, or any other way, their Cure is much alike; they only differing, *secundum magis & minus*, only if they be burnt with Gun-powder, they must pick out the powder first, else they will carry the same blew mark in their faces, which some of our people use to do in their hands and arms, which I have often been employed to take out, when done wantonly in their youth; but could never remove this mark, otherwise than by taking off the skin.

If the Burn be superficial, it raises the *Cuticula* up in Blisters. If it go deeper into the skin, it causes an *Eschar*: If it burn deeper into the flesh, the force of the fire makes a hard crust with a contraction: In all these the pain is excessive. Once dressing a Gangrened Leg with warm Spirits of *Terebinth.* &c. Mr. *Arvis* and Mr. *Hollyer* Chirurgeons, and others being close about me, and I upon my knees; the candle being too near the hot Spirits, catcht the flame, burnt my thumb and fingers, with that part of my hand before I could get free from those behind me to throw it into the chimney, wch was some distance off. I felt much more pain for the while in the superficial scalding, than where it was burnt to an *Eschar*. The pain is vehement, & makes great fluxion. The Indications of Cure are of two kinds, either by refrigerants and Emollients to bath or anoint the part, until the heat be off, and the *Eschar* removed, and then to deterge and cicatrize; or by hot medicaments to relax the skin and open, to resolve and dissipate; and so by accident allay the heat and burning. The Refrigerants are *Aq. Solani*, *Plantag.* *Hyoſciami*, *lac Ebntryatum*, and all the cooling Juices and Unguents; as *Album*, *Nutritum*, *Populeon.* *Rosat.* &c. These

Cure of a  
Burn.

By Refri-  
gerants.

These must be used warm, until the heat and pain cease, or the fire be taken out, (as the common expression is) else they will rather cause pain: The other is by Rarefaction to allay the fiery heat and pain, which in the first place is done, by the holding a burning-hot Iron or fire to the part; so whilst the fire calls forth that fire it made, it becomes its *Alexiterium*. But the common remedy is to apply salt and an Onion beaten together upon the Burn. But this is not to be done after the Blisters be out; for so you exasperate the pain and increase the inflammation. There are many other things do the like, *Fimvs Equinus* doth the like fried in *Ol. Nucum, uva immatura, Sambucus & Ebulus, in oleo Coct. Calx viva extinct. & cum Ung. Rosaceo mixta, ad consist. Ung.* These are to be renewed often, until the pain and heat be off, which they in few days effect; if there be *Cacochymia*, it is another kind of work: If these applications do not prevent the arising of *Pustula*, you must cut them as they arise, lest by their Erosion they make hollow Ulcers, and inflame with sharp pains, Fever, &c. But where they are burnt to a crust or *Eschar*, you must hasten its fall with Emollients; deterge, then incarn and cicatrize.

By Rarefaction.

Here is required bleeding and evacuation by lenients and spare diet, with all other regulation proportionable, as the Burn is greater or less. I could present you many cases of this, but shall give you one for all.

Regiment in Burns.

A Scholar of about ten years of age, at a School a few miles off, the evening before the Fifth of November, having fill'd his right pocket full of Squibs and Crackers, would before he went to bed, throw

one

one of them in the Embers, it took fire: Whether it scattered the fire, or some spark, or that it was the Cracker, but those in his pocket took fire also, and his cloaths were on fire; his little chamber-fellow ran for help, a little boy from some other Apartment takes the alarm, first comes in, sees his School-fellow in fire, catches up a bason of water, throws it upon him, runs out, cries help, they come in and help him out of his burnt cloaths: A neighbour-Chirurgion is sent for, who dresses him, and the next day the burnt child is brought to Town, and lodged by me. I find him burnt into the flesh, from a hands-breadth below the *Axilla*, down the side, and part of the belly, within two inches of the knee; in breadth from the belly, over the *Os Ileum* to the *Glutem*, and scorcht about the edges; and by endeavouring to free his pockets of the Crackers, which was burning there, he burnt his hands from the fingers end, all the in-side of his arm to his elbow joynt; where the parts were burnt to a crust, these I anointed with *Mel cum Succo Capar. & Pul. Iridis* mixt; and all the parts about I fomented with a decoction of *Hyosiam. Malvar. Solan. Violar. & Sem. Cydon. & Psillii*, adding to it a third part of *lac Ebutyratum*; and then Embrocate the parts with *Ung. Stramon*. Then he should have been let blood, but would not: Clysters were admitted, and pearl Juleps, his Fever was very great with the pains; as any Blisters arose we snipt them. As they became raw, I finding that Cerots or ought else of Pledgits were apt to shut in Matter, and bring off the skin with it; dipt a fine Lawn in the decoction, and laid it over the parts, and with a feather dipt in *Ung. de Stramon*, mixt with *Ol. Amygdnl.* anointed the Lawns, through

through which the Matter passed, and the parts lightly burnt healed; The parts deeper burnt, as they threw off their *Eschars*, I digested, with the yolk of an Egg, a little *Tereb. lot. in aq. Solani*, adding a little *Farina Hordei* finely searsed *cum. Ol. Amygdalar.* with a little Saffron. Upon the sides I laid of this *Ung. Stramonii*, with a little *Calx Lot.* and on other parts *Ung. Album*, adding a new-laid Egg to it. Thus each part is to be considered, and especial care that Matter be no where pent in.

In these large Burnings there are variety of intentions at the same time: Some require anodynes, Others detergents; digestion some, and others desiccants: Some the parts drest twice a-day, Others but once: Some I drest with this *Ung. R. Ol. Sambuci ℥ij. Cera ʒiij.* These I melt, then taking it off the fire, I add *Lithargar. Cerussa, Calcis lot. Thuris & Sarcocol.* Upon some of these Lawns I laid Pledgits dip'd in a solution of *Troch. Alb. Rhaz. made in a decoct. of Equiset. Ros. Rubr. and Summit. Rubi* to cicatrize the part: And as the part bears, I make it more drying. Thus I happily cicatrized this young Gentleman, even and smooth, without the least unequal *Cicatrix*; nothing but the red colour to make it discernable; and that was gone off his hand when I see him last. And I must tell you, in these great Ulcers it will require your care, that an *Hypersarcosis* be kept from growing upon you; for so your Cicatrizes will be deformed. I have had some persons of good quality come to me, so deformed with these, as they have suspected them to be wenny; and where they have hapned upon womens Breasts, they have suspected them Cancerous: These were much to the credit of the Female-Chirurgery. In others from ill Chirurgery the

Several Indications in a large Burn.

Medicines  
for Eyes  
burned.

Observa-  
tion.

the lax flesh hath grown so high and callous, as when one of them came into my hands, he required to be burnt again in order to his Cure; but I performed it easier. In the face there is a special care to be had, as also in the neck and breasts of the Female sex. A great care must be had likewise of the Eyes, that they be drest with no greasie medicines, and that the Lids be not drest with too drying, lest they contract and make a *Lippitudo*; in the cure of the Eyes you have Pigeons blood, Breast milk, *Aq. Solani*, *Plantag. Ros.* *Pomor. Sem.* *Cydon. Fennug. Troch. Alb. Rhas. Turia, Lap. Calam. Thuis, Sarcocol.* walht or nor walht. The Ears, for want of care, I have seen adhering to the scalp, and the fingers one to another; and in others close contracted, with hard *Callus*; one of which I cut: It was a Boy from *Cheshire* the Lady *B.* commended to me. I cut the *cicatrix* of each finger, and caused a roul to be placed under his crookt fingers, which carried with bars to the inward part of his wrist, which had by skrew there fastened gently, thrust forward the bar, till it had born all the fingers before it, and by a compleat extension restored them to their former liberty. The wrists and other joynts are subject to the same inconveniences, which are prevented by the knowing Artist, by the well ordering them, without which the best Medicaments signifie little.

## CHAP. II.

*De Gangræna & Sphacelo.*

**T**HE most cruel Symptoms that attend great wounds, and especially Gun-shot, with broken bones, are *Gangrana & Sphacelus*; Gangrene is the beginning of a *Sphacelus*; It is the disposition of fleshy, and Spermatick parts to a mortification: *Sphacelus* is a perfect Mortification, with the extinction of the native heat, and privation of Sense and motion of the part. They differ only as the Mortification is more or less.

The Signs of *Gangrene*, and *Sphacelus* are much alike, the last more intense; it is of a deadly Livid Colour, Fetid, the lips Flaccid, without heat or sense of Knife or Fire; if there be yet sense in it, 'tis there *Gangrena*; If no sense then *Sphacelus*. Signs;

*That Brother was grossly ignorant, that told me aloud, there was no need of enlarging the wound, he could turn his finger in it, and pull out the rags, &c. As I came out I met Dr. W. who askt me how the Patient did; I replied the Chirurgion within hath given me unwittingly the certain sign of his death, which I had some two or three days before prognosticated, and advised his wound to be laid open for perspiration, and the taking out of Extraneous Bodies: The Chirurgion tells me there is no need, he hath easily put his fingers into the wound and pulled out some rags,*

by which I conclude the Patient will dye in few hours : The Doctor replied, yea, without doubt, and the Patient did die the next day. In magnis vulneribus & pravis si tumores non appareant, ingens malum. This was a great wound, and not being digested, it should have been accompanied with flux of humor, and Inflammation. The lips of the wound full, and rather with a narrow contracted Orifice, but the heat was decayed, the tumor sunk, and the lips flaccid.

Causes of  
Gangrene.

The causes of Gangreen are various in Gun-shot wounds, it commonly happens from error in the first applications, and not making timely extraction of the Extraneous Bodies, and shivers of bones ; which prick the nervous and fleshy parts, by which great flux of humors falls into them, which debilitates and choaks their natural heat ; Cold hard winters, by intercepting the spirits, cause mortification ; hard Bandage is a caused deficiency of heat in old age ; And the Scorbute is often a cause.

Prognosticks.

The Prognosticks of these are sad : The *Sphacelus* incurable ; The *Gangreen* is curable, if the habit of the body be good and timely succoured ; otherwise it terminates in *Sphacelus*, and the Patient dies miserably ; whensoever you see the Inflammation will not discuss nor suppurate, or that you perceive the bottom of the wound doth not matter, but feels deeper, soft and more foul, you may suspect ; but if the matter be changed to worse, you may assure your self the heat is decaying, and the outer Symptoms in the change of Colour and sinking of the Tumor will follow. Therefore hast to prevent it, there being great danger in delay ; If it change colour,

Cure.



colour, and Blisters arise with certain Livid spots, and they but in the superficies of the skin, Scarifie them to the Quick, and let them bleed freely, by your Patient's sensible feeling them, and by the fresh trickling down of blood, you may judge of the mortification: But if the *Gangreen* have crept deeper, or arise from the bottome of the wound, then Scarifie deeper into the fleshy parts to the Quick; and if there be any abscess deep under the muscles or lips of the wound, let it out; So shall you give a breathing to the parts: If in making your deep Scarifications, you chance to cut some Vessel, whereby a flux of blood happens, have a care of Choaking the part with your Astringents and Dossils; for so the *Gangreen* will be increased: In this Case, I propose the Actual cautery, which will not only secure you from a flux of blood, but dry up the putrefaction: Then you are to apply such things, as may remove the *Escar*; as honey, powder of *Ireos* and juice of an Onyon: And afterward deterge, Incarn and Cicatrize as in other wounds. If in your Scarifications you wound a Nerve or Tendon, you add to the *Gangreen*; So you do if you burn but in part, or apply sharp Medicaments upon them newly hurt; or it may be it was at first, as I said, some Nerve oppress'd by hard bodies, or prick'd by shivers. Consider well, and if such lie in your way, (as in Nervous parts they may) you had better cut them off, or burn them through, than Scorch them: The hurting and burning of these is often a cause that the pain and fluxion is kept up. I see it daily in my practice in Sinewy parts, and while I was a writing of this, I cut off some of them to quiet the part, which otherwise upon every touch was grievously pained

Observation.

Observation.

and inflamed; that so I might with more ease come at the carious bone that lay under it: But if you meet with none of these accidents, then after Scarification, consider how far the *Gangrene* hath proceeded, and accordingly cleanse the wound, by washing out the clotted blood, either with a Tincture of *Myrrhæ* and *Aloes*; with extract *Scoræi* or *Theriac. Aristoloch. Gentian*, or (if you will) add *Calcantum*; or that common Medicine of the Ancients, Salt in water, or a good *Lixivium*, or dissolving some *Ægyptiacum*, and afterwards it is in your choice whether you will dress it warm, with these or some Chymical oyles, as *Terebinth. Caryophyl. &c.* In a *Gangrene* coming in a *Phlegmon* elsewhere mention'd, I Scarified the parts, and washed out the Blood, with a little ung. *Ægyptiac.* dissolved in *sp.* of wine, and fill'd the Scarification round, between the Gangren'd lips and sound parts, by Sir *Alex. Frasier's*, chief Phys. to the King, order with a precipitate; And applyed over such a like *Cataplas.* *R. farina fabar. Lupinor. pisor. an. lib. coq. in Aceto optimo & melle*, with the addition of *Succ. Apii & Absinthii*: The part where we sprinkled the precipitate separated with a perfect good matter, as much as was of it, and I have since often used it with good success. I have sometimes when the *Gangrene* hath been coming on, wash'd and dress'd the Patient, with a little *ol. Tereb.* hot with an Arm'd Probe, and dipt a Dossil, first in the same oyl, and then in precipitate, and put into the wound; And a Pledget of *Basilicon* dipt in the same oyl of *Terebinth.* hot over that; and in hast mixt the Crums of a wheaten Loaf, with good Brandy; and stirring it over the fire, with the yoalk of an Egg, and some Saffron to the form of a *Cataplasma*, and applied it over

over the part afflicted, and roul'd it gently on : The first time I ever used it, was upon a contused wound, on a person of a full body, his pain was great, his wound gleeting, and the parts changed in their colour : Against the next morning I was better provided, but there was no need, his pain was mitigated, the colour of the lips was returned, and the wound dry : I suppose my precipitate with the oyl had made some little *Escar*, therefore let it alone to fall off of it self, and applied a fresh pledget as before, over the Dossils, and after I had a while fomented the part affected, I laid over it the remainder of the former *Cataplasma* : The next dayes dressing the Dossils came out with good digestion, and the wound afterward was Cured. But in these according to the increase, you must fit your Applications, *farina, hordei, fabar. orobi, Lupini, lentium, pisorum, sumit. Centauri, Min. Absinth. Scordii, Cardui Benedicti : Ruta, rad. Ireos Aristoloch. Gentian, vincetox. Sal. com. Lixivium. oximel. Myrrha & Aloes sp. vini* ; These are the common remedies, of which Fomentations and Cataplasmes are to be made, to corroborate and resist putrefaction.

Then you have the common *Egyptiac*, which you may heighten by the addition of *sal. com. Armoniac. nitri, Theriaca, Mithridati, Camphora, &c.* and a good defensative above the part, of *Bole Terra sigil. sang. dracon. Acetum succ. solani, ol. Ros. Myrr. Cera, Alb. ovor. &c.*

In these dressings you are to cut away the mortified parts ; and each time cleanse it of its putrefaction, otherwise it may be feared, it may be corrupted again under the *Escar*. Note,

If after all these Endeavours, the *Gangrene* pene-

Actual  
Cautery.

trate more inwardly, you must then attempt it, by the actual Cautery according to Hypp. *Illi affectus qui Medicamentis non sanantur ferro sanantur, qui ferro non sanantur Igne sanantur, qui Igne non Curantur hos existimare oportet insanabiles*; Those diseases which will not cure with Medicaments, are cured by a Knife, and those which yield not to that, are cured by Fire, and those which will not by either, are counted incurable.

By the actual Cautery you shall resist all the degrees of putrefaction, except a confirmed *Sphacelus*, it not only corrects putrefaction, but corroborates the part.

But if after all our vigilancy and industry in contriving remedies to resist the *Gangrene*, it does yet delude us, and terminate in *Sphacelo*, there is then no more need of taking Indication from antecedent causes or changing of Medicines, according to the variety of the Causes that introduced it: whether a *Gangrene* arise from an hot *Intemperies* or cold, moist or dry; *Sphacelus* is always the same extinction of the native heat and destruction of the Member: The mortification creepeth on, and not only incompasseth the Member, but infecteth the Spirit to the very heart with its corrupt vapours, mortifying the Vessels all along the sound parts, leaving the Member immoveable without sense or heat, rotten, black and cadaverous; wherefore there is nothing now to be thought of in this case, but Amputation or cutting off, *quia curatio syderationis non consistet in medio*, the cure of this disease not consisting, as I said, in outward applications, but manual operation; and what success may be therefrom expected is much to be doubted. *At satius erit, with Celsus, Anteceptum auxilium experiri quam nullum.*

Extirpation.

*nullum.* It is a miserable kind of help, yet it is the determination of all Authors, that in *Sphacelus*, *Membrum corruptum abscindendum est*. In this case it becomes the Chirurgeon to acquaint the friends with this last woful kind of remedy, and withal to make his prognostick accordingly, and then provide all things in readines: But before we undertake this last Remedy, we must consider how to proceed in the operation; In those places where Amputation cannot be made, as in the Buttock, Shoulder, Back, &c. *Fab. Hild.* proposeth the use of potential Cauteries applyed to the mortified part, and often renewed, till the last *Escar* reached to the live flesh; yet he condemneth *Arsnick* as being venemous, and producing many dangerous Symptomes: It is true, that I my self have often used that method of Cure in *Sarcomata* with good success, but in a mortification there appears to me many greater Inconveniences that attend it; first from the caustick it self, as he proposeth it of Salts, it will melt in the working, and is more disposed to spread in the skin than penetrate deep into the flesh: This every young Chirurgeon knows in his making of Fontinels, that he cannot apply a bit so little with all his Art in defending it, but that it will have spread much farther than he designed it; then the separation of such *Escars* is too slow to effect your purpose, and in an ill habit of body, such medicaments are apt of themselves to procure a mortification rather than Cure: Whereas on the contrary, an actual Cautery answers all Intentions; it not only consumeth the mortification, but dryeth up the venemous humour, thereby preventing its farther progress, and also communiceth warmth to the languishing parts; by

vertue of which the separation is much farthered, and by working upon the Gangren'd sloughs performed more easie, as I shall shew you in my practice elsewhere. But where Amputation it self is feisable, nay altogether necessary, as in the Limbs, there ariseth a new question; Whether it ought to be done in the sound part or in the dead: *Fabr. ab Aq. Pend.* adviseth the dead part within a fingers breadth of the live, (as also do many others) then with a Cautery burns up all the remaining mortification. Others do perform the Operation with a hot Knife, the figure of which you may see in *Hildanus. Aq. Pend.* speaks so confidently of his success in the practice of this way, that utterly to deny the thing were to give him the lie. I shall only make this objection, that the *Sphacelus* doth seldom affect the Member so equally round, as that an operation in the dead part is feisable; nay which is worse when once the mortification seizeth on the great Vessels, it runneth up so fast under the skin, that before any considerable part of the Member is outwardly Gangren'd, on the one side beyond the Knee or Elbow; The other side will have reached to the *Inguen* or *Axilla*. This I confess frustrates all manner of Amputating, whether in the sound or mortified part: yet generally speaking the Gangrene doth not grow so fast, but that if you make Amputation two fingers breadth more or less, within the live flesh, you may prevent it, and that far better than it is possible to be done by the other way of operating; for if you work there by actual Cautery with an hot Knife, your Knife will stick fast in the flesh till the moisture be wholly dried up, and then you must repeat many Knives and Cauteries, in every one of which you will meet with

with the same inconvenience; Yea before you can cut through with your hot Knife, it is very probable that you will near the Bone meet with some parts that are alive and sensible, especially when you come to the *Periostium*; for the Bone doth not usually corrupt at the same rate of swiftness with the other flesh, and then all your pains and trouble will be as great or greater than if you did it in the sound part. As to other Inconveniences, I shall refer you to *Hildanus*, who hath taken pains in confuting this opinion.

The greatest motives to the Ancients for the use of this and that other way of Amputating in the Joints, I presume was the easiness of preventing fluxes of blood this way, which they found more difficult than the other.

But modern Chirurgeons have answered this objection by good Bandages and deligation of the Vessels, and when we cut above the Knee by clapping Cauterics to the Vessels only, which sufficiently answers that Intention: Thus have I seen in my first Sea voyages, Amputations made above Knee, and afterwards practised them with great ease and safety:

Now since not only in this Chapter of Gangrene, but frequently in this Book, we have mentioned Amputation, I think it necessary to take this occasion of shewing the manner of performing it, the rather because the operation is much the same, whether it be done upon the account of Gangrene, or for other reasons. I shall therefore in general terms insert the whole doctrine of Amputation though briefly, not mattering whether the examples instanced be *Sphacell* or not; all instances

What is to  
be con-  
sidered in  
heat of  
Fight.

instances being alike instructive, *viz.* If in heat of fight at Sea, a Leg or Arm be shattered by Splinter or Great Shot, you are to consider the loss of Substance, whether the principal Muscles and Vessels are torn off; or if the wound was inflicted by Musket-shot in the bending of the Arm, in the inside of the Elbow, or in any of the Joints of the Leg or Arm; if you cannot extract it, or if the Bullet did pass through, yet if the fracture be great, or the shivers of Bones so lodg'd within the Joint, as you cannot pull them out, and if the Artery be wounded by the same shot, and that you cannot come to dress or stop it otherwise than by crowding dossils into the wound; you shall then presently make extirpation of them; cutting the Arm in the place where it is so shattered, and saw off the end of the Bone even; your assistant the while pulling up the musculous skin and flesh. If it were the Ankle thus maimed, you shall then cut off the Leg within three or four fingers breadth under the Knee, for that so long a stump would be troublesome: But if it were shattered in the calf of the Leg, do not put your Patient to the pain of Amputation, for the gaining a hands breadth or higher: If the Toes with part of the foot was shot off, cut off the lacerated parts smooth, but with care to save as much of the foot with the heel as you can; it being much better than a wooden Leg: But if the Arm or Leg be not so shattered, though the wound be large on one side, and hang gaping down with great fracture of Bones, yet be not discourag'd, the largeness of the wound will make for your better pulling out those extraneous bodies, shivers, splinters, rags, or ought else; and for the easier discharge of matter, dress it as a wound by a splinter.

If



If the great Joynt be so shot by Musquet-bullet, that you think it not reasonable to cut off the member, be sure you make extraction of the Bullet, and free it of all extraneous bodies; leaving not the least shiver to prick the Nerves or Tendons, and make such way presently, that you may be able to dress the wounded Nerves, Tendons, &c. without after-openings, when the part is inflamed and unfit for it.

If after some days the wound do not digest but inflame and Gangrene, and the Gangrene do not yield to your Applications, as hath been proposed in Gangrene, then as in *Sphacelus* you are to proceed with the extirpation of that rotten member, while the Patient is free from *Delirium*, and hath strength to bear the operation.

Seat him so as it may be for your conveniency. At Sea they sit or lye; I never took much notice, nor do I remember I had ever any body to hold them; with the help of my Mates, and some one or two that belonged to the Hold, I went on with my work. At *Sterling* I made an Amputation above the knee, and had as little help; besides my servants, there was only a Sea-Chirurgion assisting me, we stopt the flux of blond by actual Cautery, the wound digested and cured without any ill accident; but where we have convenience to proceed more formally, there we place the Patient in a Chair, where he may be held firm, and in a clear light, and your assistance come better about you; the member is to be supported by some one of the servants, then one of your assistants should draw  
up

up the skin and musculous flesh above the part you propose to extirpate, then make a Ligature two fingers-breadth or there-about in the sound part; so as if you Amputate in case of Gangrene, you may be sure to quit your self of the mortification. This Ligature is omitted by many of our Chirurgeons here in the City, they only making a turn with a Tape, pinning it on as a mark to circumscribe by; and instead of the Ligature I propose they make a Gripe, which Gripe is commonly made by some Assistant who is strong in Griping: Indeed this is good where a shattered member is to be cut off to smooth the stump, where there is no great fear of bleeding; but in Amputation it seems to me to be very inconvenient, for I never see any man so gripe, but that the Artery bled with a greater force than was allowable; yea when Mr. *Wodall* grip'd, who was so applauded, and in truth made for the work; it being so, in what a huddle is the stump then drest: But suppose the uneasie posture, and the long griping tires him, or that his hand be cramped the while, what is then the condition of the Patient? Whereas by this ancient way of Ligature which I propose, the Vessels are secured from bleeding, the member benum'd, and the flesh held steady, ready to receive the impression of your crooked Knife, (or Razor which I have often Amputated with) the Amputation made, the drawn-up skin and musculous flesh falls down to cover the stump, and the Chirurgeon hath time to take up the Artery or cauterize the mouths of the Vessels, and afterward to bring the lips over the stump by a cross stitch. This Ligature made, the Assistant strengthens it, whilst he draws up the musculous flesh; the mean time the Operator with a sharp  
crooked

crooked Knife by a turn cuts round to the bone, then with the back of his knife he scrapes the *Periostrum* from the bone; if there be two bones, he with the Divider separates the fleshy membrane there, while the Assistant pulls up the divided parts more powerfully; during which the Operator with a few motions saws off the bones or bone: If there remain any Asperity on the end of the bone, it must be smoothed. There is to be a bowl with Bran or sifted Ashes to be under the member, while this work is doing, to receive the blood: When you make this circumcision, begin in the upper part on the out-side of the Leg or Arm, cut down close to the bone, bringing your Knife round to the inside, where the great Vessels are; so shall you have the less effusion of blood: That done, and the bones freed of the *Periostrum*, *Guido* proposes a linning, and *Hildanus* a kind of a purse to be brought over the upper-divided flesh, to pull it upward, to make more way for the Saw; but I think that needless. The flesh divided, the parts separate enough of themselves, besides the Assistants pulling up the musculous flesh and skin is sufficient, the bone is to be sawed off close by the flesh above: that done, you are at liberty, whether you will cauterize the Vessels by a Button-Cautery, or by Ligature stop the bleeding, or by agglutination. The use of *Calcanthum* I do not approve, to apply *Escaroticks* to the ends of the Nerves and Tendons, new incised, causes great pain, weakens the part, and makes way for Gangrene: It not being likely you can so apply them to the Artery, but that you must burn the parts about, which are, as I said, the Nerves, &c. The way *Hildanus* proposes by drawing the Vessels out by a pair of Forceps,

is not a work to be done in heat of fight, nor without a clear day-light; if you attempt it on Land his Arm would be bowed, and his Leg stretcht out, that the Vessels may be elonged after extirpation, that you may the better take hold of them. *Ambr. Par.* proposes a more easie and sure way of deligation, that is, by passing the Needle with a good strong Thread through the skin, about half an inch above from the lips, your Needle to come out just by the side of the great Vessels, then pass your Needle from the other side over the Vessels within, through the Raw-flesh out through the skin; there putting a fold of a rag or of Emplaster spread, and tye the two ends of the thread over this straight; thus you bind the Artery and Vein with inconsiderable pain: But at Sea, I suppose, your actual Cauteries are always at such times in readiness by you: Therefore in such cases use them, they will secure your Patient from the present danger, and fortifie the part against future putrifaction, they requiring no such strict Bandage, as that thereby you shall fear interception of Spirits; when we Cauterize the Artery, we do then touch the end of the bone, it hastening the Exfoliation: The next thing is the loosening the Ligature, and bringing the lips close over the stump, then whether you should with a cross stitch hold them so, or content your self by Bandage as well as you can, is by some controverted; they that object against it say, it causes pain and inflammation, so doth Bandage, if it be made too straight; Therefore they should object against that also. The most that I have seen without cross stitch have the next dressing been broad stumps, some of them with lips turned outward by the Bandage: In the least of them the whole  
stump

stump hath been bare, whereas those where I have brought the lips over the stump, have been the next dressing close, covering the great Vessels, and a third or half part of the stump hath been well digested, and by the second dressing hath been near agglutinated, so far as it lay under that skin, & without inflammation happily cured: Whereas the broad stump is a certain sign of a long Cure, and commonly death. The exposing those incised parts too much to the Air, causes pain, and the want of native heat makes them gleet; or if they do digest, the discharge of so great a quantity of Matter commonly exhausts the Spirits of the Patient.

If the musculous flesh and skin was well pull'd up in time of Amputation, and brought over by a moderate extension, as far as they will easily admit, you will find it not painful; you are to pass the Needle with a strong brown-thread seared, you are to pass it about half an inch from the edges of the lips, having made them cross from side to side equally, tie them with a moderate striction, then apply a Pledgit on the Cauterized Vessels with *Pul. Irid. Suc. Cepar. & Mel.* But if no Cautey was used, then Buttons of Tow spread with your Restrictive, and dipt in *Pulv. Galeui* are to be applied to the mouthes of the Vessels; afterward sprinkle the stump thick with this powder, *R. Bol. Armen. Farin. Volatil. Picis, Naval. an. ʒiiij. Aloe, Thuris, Mastich, Sang. Dracon. an. ʒj. Gyps. ʒjss. Pil. Lepor. Corii rassat. an. ʒij. Pul. Subr. m.* Mix some of the same cum *Albumine ovor.* and apply it upon a round thick *Stupa*, which hath first been wet in *Oxycrate*, and dried; over that another *Stupa* spread with the same so broad as to  
come

come over the first, & up a pretty height above the stump this is to be snipt deep in the edges, that it may lye smooth about the member; an Oxe-bladder ready cut & wet is to be turn'd over this, & a cross cloth next the bladder to hold the dressings steady; then with a Rouler with two heads, begin upon the stump, & roul up to the next joynt, and so again about the member to retain your dressings firm; then fasten it, so as that it may not be capable of falling off. But before you make this Bandage, you ought to apply your defensative over the parts above the stump: Some apply it before they begin the Amputation, but then it is found full of wrinkles, and sits uneasie. In the dressing of these stumps, you are to apply your medicaments, as you may without much bungle roul up the member, and place it to the ease of the Patient, one holding his hand some-while upon the stump: Your defensative may be of the same which is proposed in Gun-shot-wounds, or this; *Rx. Far. Hord. Bol. Armen. an. ʒiij. Sang. Dracon. ʒjss. Flor. Ros. Rubr. Balauft. Nuc. Cn-pressi, Pul. an. ʒvj. Acet. ʒx. Album. Ovor. n. viij. Ol. Ros. & Myrtil. an. ʒj. Cera q̄s.* Boil the powders in the *Acet.* then add the rest to it, to make it of the consistence of a *Cerot.* The third day take off the dressings, and then you may cut the cross stiches, and sprinkle the wound with *Pul. Galeni*, and dress with this Digestive; *Rx. Terebinth. Lot. in decoct. Hordei ʒiij. Ol. Lumbric. ʒj. Gum Elemi dissolut. in prædict. Oleo ʒss. Far. Hordei Cribrat. ʒij. Vitel. unius Ovi, Croci Pul. ʒj. m.* Apply to the bone a Pledgit of Lint wet in *Spir. Vin.* and dried; after the wound is digested, you are to deterge with *Mundificat. Paracels.* or *Apii*, or this, *Rx. Terebinth. Venet. Lot. in Spir. Vin. ʒiij. Pul. Rad.*

*Rad. Iridis, Aristoloch. Rot. Sarcocoll. Thuris, an.*  
*3j. Mel. Ros. 3j.* Then incarn and cicatrize, as hath  
 been said in Compound Wounds.

Whilest I was a prisoner at *Chester*, after the  
 Battel of *Worcester*, I was carried by *Coll. Ducken-*  
*field's* order to a substantial man, that out of too  
 much zeal to the cause pursuing our scattered forces,  
 was shot through the joynt of the Elbow, from the  
 lower and outer-part of the *Os Humeri*, out be-  
 low, between the *Ulna* and *Radius*; he had la-  
 boured six weeks under great pain, the wound was  
 crude, the lips turgid, with lax white flesh, the  
 Bones not likely to unite, many shivers lying with-  
 in the wound and joynt, without hopes of getting  
 out, the bones within carious, and the member  
 œdematous from the wound down-wards to the  
 fingers-ends, full as it could hold; and the more,  
 for that the Patient could not suffer his Elbow to be  
 bowed as to bring his hand to his breast, the upper  
 part of the wound from above the joynt to the  
*Axilla* above the shoulder inflamed, a perfect  
*Phlegmon* formed. The Patient thus tired with  
 pain desired to be cured, or have his Arm cut off:  
 To which purpose he had procured the Governors  
 leave for my staying with him. But while that  
*Phlegmon* was upon the upper parts, there was no  
 hopes of a prosperous Amputation, nor of cure  
 while those shivers of bones lay pricking the Ner-  
 vous parts within the joynt: The *Phlegmon* was too  
 forward for repercussion, and yet not likely to  
 suppurate in less than a weeks time; therefore I  
 endeavoured by Emollients and somewhat discuti-  
 ents, to succour the grieved shoulder and parts  
 thereabout, by hindring the increase of the *Phleg-*

Observa-  
 tion, the ill  
 conse-  
 quences of  
 wounds in  
 the Joynts.

Amputa-  
tion.

mon, and give some perspiration to the part, then with good fomentations to corroborate the weak and œdematous member below, and by detergents, fomentation, and bandage to dispose the wound and fractured part to a better condition, and made way for discharge of Matter, and the shivers of bones, also to remove the *Caries*; to which end I had brought his hand nearer his breast: A few days after I opened the Abscess above, and below under the *Axilla*; A while after, the Matter discharged from above, the tumor flatted and agglutinated within, and the Ulcer cured: But the continual pains stirr'd up in the fractured joynt, kept that opening in the *Axilla* from healing: The Patient growing weaker, and without hopes of cure, I was necessitated to proceed to the Amputation: To which purpose I sent to *Chester* for Mr. *Morrey* a knowing Chirurgeon, (since Mayor of that City) to come with Instruments and other necessaries whereby I might the better do the work. Mr. *M.* came, we prepared dressings ready, which were *Stupa* or Pledgits of fine short Tow well workt, some like the *Splenia*, others round bigger or less, these wet in Oxycrate and dried; also some buttons of Tow, then compresses of Linnen-cloth dipt in Oxycrate, three or four Roulers with one or two heads, Needles threaded and seared for making the cross stitch, and lesser Needles threaded for common use, with Filletting for Ligature, and Bladders ready cut and wet in Oxycrate. A defensative of the above-mentioned prescription, spread upon a soft Linnen-cloth, to apply upon the parts above more distant, and a mixture of the Astringent powders with whites of Eggs to spread upon the *Splenia* and buttons, which buttons were also



also dipt in some of the same powder: Then for the round Pledgits which were designed to be applied next to the stump; Mr. *M.* proposed that they might be spread with a mixture of *Umber* and *Calx viva*, with whites of Eggs, according to Dr. *Read* in his observation upon an Amputation he performed upon a servant of the Lord *Gerrards* at *Gerrards-Bromley*, whose fame yet lives in that Country, and amongst us Chirurgeons, while his painful Lectures have a being.

The *Apparatus* thus made, and the Patient some while before refreshit with a draught of a good Caudle, his friends take him out of his bed, and place him in a Chair towards the light, one of his servants held his Arm, another of his friends his other hand, then Mr. *Morrey* drew up the skin and musculous flesh of the Arm towards his shoulder, whilest I made a strong Bandage some three or four fingers breadth above the affected part: Then with a good Knife I cut off the flesh by a quick turn of my hand, Mr. *Morrey* pulling up the flesh, whilest I bared the bone; then with a few motions of my Saw, I separated the bone, the Patient not whimpering the while. After this Mr. *Morrey* thrusting his hands down-wards, with the musculous flesh and skin which he had drawn upwards, I with a strong Needle and Thread passed through the middle of the fleshy skin on both sides, within half an inch of the edges, and brought the skin close within a narrow compass, and having tied that fast, and cut off the string, I passed the Needle again through the two contrary sides, and this I tied as close; this is called the Cross-stitch, and is of so great use, as without the performance of this, the

Patient is long in Curing; and sometimes through the great discharge of Matter the Spirits are wasted, *Spasmaes* and the like follow: Or if he do recover, 'tis a long work and much pains; whereas by this cross stitch the stump is covered to the breadth of a five shillings or half-crown piece, the flux of blood in a good measure choakt, the heat of the part kept up, and the wound soon cured, and the Patient grows fat and strong: The while, having made this cross stitch, I untied the Ligature, and applied little round Stupes of Tow, which had been first dipt in Oxycrate, then dried, and spread with a Restrictive, wherein was a quantity of *Galens* powder, mixt with *Alb. Ovi.* From these round ones I laid long Pledgits, spread with the powder of *Umber*, &c. mentioned by Dr. *Reade* in his Lectures; this and the long Pledgits were Mr. *M's.* proposal, and sat very close from the middle of the stump each way upwards along the Arm: then I put on a Bladder, a cross-cloth, and rouled up the stump, and made a Bandage from under his other Arm, and over his Neck to this Bandage, (which prevented an accident which hath since happened to a Patient here in *London*, where many of the best Chirurgeons were concerned.) Then I put him into his bed, and three days after opening him, the wound was well digested, but the binding occasioned a new eruption of the Ulcer, which formerly came from the *Phlegmon* in the *Axilla*: Our stitches brought the skin so close to the stump, as here was no place for buttons with *Escaroticks*, which are so constantly used in these Operations, which lying commonly upon the new incised flesh, Nerves, and Tendons, do much disturb the quiet of the part.

The

The second dressing was made by a digestive of a little *Terebinth*, washt in decoct. *Malvar*. with the yolk of an Egg, and *Ol. Rosar*. and with a large Stupe of Tow, with some of the same digestive, and a proportion of *Galens* powder upon it, and having Embrocated the parts with *Ol. Rosar*. and a little *Acet*. I applied my *Empl. de Bol.* over all, and rouled up as formerly, but very easie; and afterwards mundified with that of *Paracels*. and with *Sarcoticks* and *Epuloticks* incarnated and cicatrized, and the bone Exfoliated: Then having procured a pass to come to *London*, I hastened away, leaving his stump cured.

At the Siege of *Weymouth* I was called at break of day to an *Irish*-man of Lieutenant Coll. *Ballard's* Regiment, who in shooting off his musquet, brake and tore his hand to pieces after a strange manner: I purposed to cut off his hand; I sent presently to my quarters to one of my Servants to bring a Saw, and Knife, and dressings, of which at those times we had always store, which being brought, I took a red ribbon from off my Case of Lancets, and bound about his Arm some four fingers above the *Carpus*, and cutting the flesh, bared the bones of their membrane; I divided the flesh between the bones, and setting the Saw close to the flesh above, I sawed it off, and untied my Ligature above, and bringing down the musculous flesh and skin over the end of the bone, not making any cross-stitch, here dressed up that stump with my Restrictives, and rouled him up, and returned again to my quarters: I had not been one hour gone, but I was sent for again to this *Irish*-souldier, he being as the

Observat.

messenger said grievously full of pain ; I wondered at it, and hastened away, before I came to his hut, I heard him crying, I asked him what he ailed to roar so, it was a while before he would answer me, at last he told me he was not able to indure that red Ribbon that I tied his Arm with ; I was at first herein surprized, to think I should leave the Ligature upon his Arm, that being a sure way to bring a mortification upon the part : I put my hand in my pocket, and shewed him the red Ribbon on the Case of Lancets, he seemed at first to doubt it, but after he see it was so, he laught ; and was from that time in ease : Two days after our men were surprized, and chased out of the Town and Chappel-fort ; I was at the same time, it being about twelve a clock, dressing the wounded in a house for that purpose in the Town, almost under the Chappel and Fort, I heard a woman cry, *fly, fly*, the Fort is taken : I turned aside a little amazed, towards the Line, not knowing what had been done ; when I got upon the Line, I see our people running away, and those of the Fort shooting at them, I slipt down this Work into the ditch, and got out of the Trench ; and as I began to run, I heard one call *Chirurgeon*, I turned back, and seeing a man hold up his stump and his hand, I thought it was the *Irish*-man, whom I had so lately dilmembred ; I returned, and helpt him up, and we ran together, it was within half musquet-shot of the enemies Fort, he out-ran me quite.

## CHAP. III.

Of *Fistulae*.

**A** *Fistula* according to the Vulgar denomination is every sinuous Ulcer, if it have been but of two months continuance; but strictly saying those only are *Fistulae* which are narrow, sinuous, and have contracted a hard *Callus*; they are usually some years in making: The worst sort of these, at least that ever I see, was from Gun-shot-wounds with fracture; especially where there hath been loss of bones, or through long continuance the *Caries* hath chambered the bone, the lips of the wound and wound become *Callus* by keeping long open in order to Exfoliation, and sometimes through former sinuosities which have prolonged the cure, there the lips grow hard, and do become inverted thick, and are more or fewer in number as the Abscess or wound was more or less sinuous: This *Callus* of the *Fistula* is hastened by the perspiration and resolution of the thin and subtil humors, and Incrassation of the more pituitous, by the congestion of which a long pipe of skin is made, which brancheth itself inwards from the orifice quite through all the Cavities of the Ulcers, from whence it hath its name.

Difference.

The differences of these *Fistulae* are made not only from the parts affected, as some in fleshy, others in Tendonous, or in the bones, or joynts, or the breast, belly, &c. But also from the figure, magnitude and number of the *Sinus*, as sometimes only one, then again two or three crooked or winding, till they enter the bones themselves.

Signs.

They are known by the View, and by the touching of the parts, or by searching with a Probe, and from the discharge of a thin serous Fœtid Matter, and have an Arched hollowness: If by your searching the parts are pained, or a drop of blood follows your Probe, the *Fistula* is not confirmed, but if neither succeed, the *Fistula* is confirmed.

Prognostick.

All *Fistulae* are hard to cure, and those of long continuance with great discharge of depraved humors in sinuous parts amongst the bones and joynts are worst, because their *Sinus* are narrow, and have contracted a hard *Callus*, and without that be removed they can admit of no cure.

The way of Cure is performed by manual operation or by Medicaments; But before you proceed in either, you are to consider that these *Fistulae*'s are subject to pain and defluxion; wherefore you are in the first place to proceed by evacuating of those humors which may disturb you in your work, and that is done by purging and bleeding, good *Traumatic* decoction and observation of dyet, as is said in universal regiment.

To

To proceed to the Cure by manual operation, Cure, you are to consider the part affected, whether the *Callus* be only in the lips, or in some part of the *Fistula*, or that the *Callus* be throughout the whole length of the *Sinus*, and this is discovered as I have aforesaid by the Probe, &c.

If there be neither pain nor matter, the *Fistula* tending only down directly to the bone, then do you let it alone accounting it an imperfect *cicatrix*, and if undisturbed will in time grow more close; But if it be the former, then you must remove the *Callus* if you propose to cure it.

If the *Sinus* may conveniently be laid open, divide it with Knife or Scissers the whole length; if after the laying it open, the *Sinus* be not *Callus*, or not a confirmed *Fistula*, then deterge the Ulcer and Incarn and cicatrize it: But if the orifice of the *Fistula* be streight and narrow, that you cannot lay it open, you must then dilate it with Tents of Sponge, *gentian*, *Aristolochia*, Elder-pith, &c. untill the *Sinus* be large enough for your purpose; and to further this work it may be proper, that you outwardly apply such Medicaments, as may by their Emollient and digestive quality resolve and dissipate the matter, impacted in the parts about, and these are *Rad. Althea. lilior. Enula campan. Sigill. Solomonis, cucumeris agrest. sem. lini, fenugrac. Medulla ossium, Axung. Porcina, Axungia Humana, Anseris, Gallinae, dialthe. Gum. Galban. Amoniac. &c.* Of these you may make fomentations, Cataplasma's or Cerots: You have also to this purpose *Empl. de ranis cum aut sine Mercurio, Empl. de Musilag. diacal.*  
cum

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The way of Cure is performed by manual operation or by Medicaments; But before you proceed in either, you are to consider that these *Fistula's* are subject to pain and defluxion; wherefore you are in the first place to proceed by evacuating of those humors which may disturb you in your work, and that is done by purging and bleeding, good *Traumatic* decoction and observation of dyet, as is said in universal regiment.

To



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cum

*cum Gum.* The *Fistula* thus disposed for laying open, you are to consider whether you may not remove the *Callus* by *Catheretics*: to which purpose *Celsus* proposes, *lacræ papaver, cadmia, attramentum, sutoneam, Erugo, sandarach Alum,* we commonly use our *Lap. Caustic. Vigo's Troch. de minio Arsenicum ol. calcanth.* or thus, *R. Cera resina an. ℥j. sublimati ℥ij.* mix this upon the fire, and dip a Spunge in it, but not too hot, lest you burn your Spunge; then press it out, and cut it into what length and thickness may serve your purpose; *Guido* commends *Aq. fortis* as the most Excellent for destroying the *Callus* of all these *Fistula's*: But if you had rather have an Injection, you may make this or such like, *R. ung. Egyptiac. ℥ss. sublimat. ℥ss. Arsenic. ℥j. Lixiv. ℥j. Aq. ros. ℥ij. aq. plantaginis ℥iiij.* boyl this *ad tertie partis consumptionem*, casting a little of this in with a Syringe three days together, shutting the orifice up with *Cera* or some Emplaster; so shall you consume all the *Callus*: But you must consider the parts underneath that *Fistula*, that by its too far penetrating it hurt not the bone, or parts underneath. If these answer not your Expectation, then having dilated the *Sinus*, lay it open by Knife or Actual Cautery; after the application of these stronger Medicaments, or Actual Cauteries, you must by Lenients mitigate the pain, and defend the part from defluxion which will follow such applications, and these are by decoctions to Syringe, as *fol. Malva, bismalva, violar. verbasci, Hyostiami sem. Cydonior. hordei, or ol. vittel. Byturnum. Axungia, ung. Basilic. cum ol. lileor. dealtha, &c.* and over the parts refrigerants; as *Empl. è Balo Oxelimum, Diapalma cum succis*, or some of the defensatives

tives mentioned in this Treatise: When Inflammation is off, deterge with this, R *Terebinth. in aq. vitæ lot. ℥ij. succ. Apii Cinaglossi an. ʒvj. Mel. Ros. Colat. ʒjss. decoq. ad succ. consumptionem, dein adde Aristoloch. rot. pul. ʒij. farin. lupinor. ʒss.* you may add to it *pulv. Ireos, myrrha, sarcocoll. Thuris,* and thereby Incarn, and afterwards cicatrize: If the Bone be caries, you are to consider how far the caries hath entred into it, and proceed in the removal of it, either by Actual Cautery or *Rogines* scraping the rottenness off, then by *cattagmatics* hasten Exfoliation, and proceed in the rest with *Sarcotics* and *Epulosicks*.

But if these *Fistula's* be near, or over some noble part, or that there be Nerve, Tendon, Artery, or in such bones where it reaches to the *Medulla*, or Joints where you may not safely proceed by Actual Cautery, or potential, and that it will not yield to milder Medicaments; you shall do better to palliate by some Emplasters and Unguents, as may dispose the part to quiet, purging the Patient sometimes, and observing the Universal Regiment in dyet, &c.

And old Officer of our Army labouring long under an Ulcer on the outside his Thigh, by the *vastus externus* from an old Gun-shot-wound, implored my help; the Ulcer appeared with a small contracted orifice, scarce admitting my least Probe, it ran towards the Bone about an Inch deep, then running downwards with a *Sinus* more lax, discharging a thin *Sanies* it was outwardly accompanied with a pituitous Tumor, but nearer about the Ulcer was hard, and of a darkish red colour, not unlike an Imperfect

A *Fistula* in the fleshy parts

*cum Gum.* The *Fistula* thus disposed for laying open, you are to consider whether you may not remove the *Callus* by *Catheretics*: to which purpose *Celsus* proposes, *lacræ papaver, cadmia, attramentum, sutoneam, Erugo, sandarach Alum,* we commonly use our *Lap. Caustic. Vigo's Troch. de minio Arsenicum ol. calcanth.* or thus, *Rx Cera resina an. ʒj. sublimati ʒij.* mix this upon the fire, and dip a Spunge in it, but not to hot, lest you burn your Spunge; then press it out, and cut it into what length and thickness may serve your purpose; *Guido* commends *Aq. fortis* as the most Excellent for destroying the *Callus* of all these *Fistula's*: But if you had rather have an Injection, you may make this or such like, *Rx ung. Egyptiac. ʒss. sublimat. ʒss. Arsenic. ʒj. Lixiv. ʒj. Aq. ros. ʒij. aq. plantaginis ʒiiij.* boyl this *ad tertiam partem consumptionem*, casting a little of this in with a Syringe three days together, shutting the orifice up with *Cera* or some Emplaster; so shall you consume all the *Callus*: But you must consider the parts underneath that *Fistula*, that by its too far penetrating it hurt not the bone, or parts underneath. If these answer not your Expectation, then having dilated the *Sinus*, lay it open by Knife or Actual Caustery; after the application of these stronger Medicaments, or Actual Cauteries, you must by Lenients mitigate the pain, and defend the part from defluxion which will follow such applications, and these are by decoctions to Syringe, as *fol. Malva, bismalva, violar. verbasci, Hyosciami sem. Cydonior. hordei, or ol. vittel. Byturrum. Axungie, ung. Basilic. cum ol. lileor. dealtha, &c.* and over the parts refrigerants; as *Empl. è Balo Oxelimum, Diapalma cum succis*, or some of the defensatives

tives mentioned in this Treatise: When Inflammation is off, deterge with this, R *Terebinth. in aq. viræ lot. ʒiij. succ. Apii Cinaglossi an. ʒvj. Mel. Ros. Colat. ʒjss. decoq. ad succ. consumptionem, dein adde Aristoloch. rot. pul. ʒij. farin. lupinor. ʒss. you may add to it pulv. Ireos, myrrhæ, sarcocoll. Thuris, and thereby Incarn, and afterwards cicatrize: If the Bone be caries, you are to consider how far the caries hath entred into it, and proceed in the removal of it, either by Actual Cautery or *Ruines* scraping the rottenness off, then by *cattagmatics* hasten Exfoliation, and proceed in the rest with *Sarcoticks* and *Epuloticks*.*

But if these *Fistula's* be near, or over some noble part, or that there be Nerve, Tendon, Artery, or in such bones where it reaches to the *Medulla*, or Joints where you may not safely proceed by Actual Cautery, or potential, and that it will not yield to milder Medicaments; you shall do better to palliate by some Emplasters and Unguents, as may dispose the part to quiet, purging the Patient sometimes, and observing the Universal Regiment in dyet, &c.

And old Officer of our Army labouring long under an Ulcer on the outside his Thigh, by the *vastus externus* from an old Gun-shot-wound, implored my help; the Ulcer appeared with a small contracted orifice, scarce admitting my least Probe, it ran towards the Bone about an Inch deep, then running downwards with a *Sinus* more lax, discharging a thin *Sanies* it was outwardly accompanied with a pituitous Tumor, but nearer about the Ulcer was hard, and of a darkish red colour, not unlike an Imperfect

A Fistula  
in the  
fleshy parts

fect

fect *Schirrus* : In order to his cure, I propos'd to him temperance and quiet, purging and bleeding to carry off the *Plethora* ; to the part affected I propos'd discutients and resolvents, Fomentations, Embrocations and Emplasters, as is abovesaid in the general Chapter, with Bandage to resist the Influx of humour : That done I applied a Caustic upon the orifice of the *Fistula*, and after separation of the *Eschar*, I dilate the *Sinus* by Tents made of *Gentian*, dipt in *ung. Dealthæ*. This *Sinus* enlarged, I make way to the other by the same means, and having dilated that *Sinus*, I cut it open the whole length, and fill that with dossils spread with *Basilicon* and *Turbith* mineral filling the said *Sinus*, by which I propos'd the Eradicating the *Callus* ; To the recent parts cut I apply'd dossils with my digestive, and over all a Cerot compos'd of *ung. pupuleon & cere*, and with a compress dipt in *Oxycrate* make my Bandage over all : The next day I take off my Bandage and Emplaster, Embrocate the part with *ung. Papuleon*, and apply my Cerot and Bandage over all again. This I did to allay the heat of the part, and prevent Influx of humor, nor meddling with the *Escharotick* till it came off of it self with the slough ; then where I found any part of the *Callus* remaining, I rub'd it off with my *Lapis Caustic*. The *Callus* thus removed, I deterged with the Mundificative above propos'd, and hastily Incarned, lest parts should again contract a Cicatrize, as they are apt quickly to do, whereby my former Endeavours would have been rendred vain.

A Fistula  
with Caries  
in the Os  
Tibia.

An old Officer had long laboured under a *Fistula*, from Gun-shot in the upper part of the *os Tibia*, near the Knee upon the Shin bone, where that Bone

Bone had been grievously Fractured, and from thence had been long Carous; he was my Patient in *France*, but here I finish what I there attempted and had not time to do. I here after general Evacuation applied a Caustick the whole length of the *Sinus*, whereby I took off that *Callus*, and gave way to the discharge of that Fætid *Ichor* made in the Bone, and took out several pieces of the rotten bone which was shut in there: This done, I Rugin'd away that rottenness, and dress'd the Bone with my *Catagmatick* powders, &c. By which means after some time a *Callus* thrust forth, and United with the Musculous flesh, and after which by *Sarcoticks* Incarned, and was afterward cicatrized by *Epiloticks*, as is said in Ulcers of the Legs.

It often hapneth, that in the time of Exfoliation of *Caries* in the bones, where there hath been loss of bones, as in Gun-shot-wounds is too often seen, there while we are attending Exfoliation, the lips grow *Callus*, so as the Cicatrix is deep, and the lips at some distance.

In this case heretofore I have taken much pains to better the Cicatrize, but since by often experience have found, that in time the Lips flat, and the *Callus* rises up to them of it self, and the Cicatrize becomes firm and seemly.

## CHAP. IV.

*Of Fractures in General.*

**A** Bone is a Similar part of the Body, and the hardest, and dryest of all, the General use of which is *Stabilimentum ac fundamentum reliquis omnibus partibus largiri*, to be a firm prop and foundation upon the strength whereof all the rest of the parts are built : The whole Skeliton considered joyntly may be looked upon, as performing that office to the little world, that *Atlas* hath been fabulously reported to do to the great one ; it bears the whole bulk of it, and sustains it in all its motions, none of which could be performed, if either the bones were not, or not so articulated and joynted, as upon desection they appear to be, *Nam si ossa abessent non flecteremus manus non nervos & fibras* ; nay if the least bone be but a little maimed, the use of the part is hindred, but they are not only *fulcimenta*, as *Galen* sayes *de usu partium*, *sed etiam defensio* but also a defence. The *Cranium* *veluti Galea*, as a helmet defends the Brain from external Injuries ; So *Pectus ossibus clauditur*, the Heart, Lungs, and great vessel of the *Thorax* are guarded by a wall of Ribs ; the *Spina* is a bulwark to the Marrow included in it, and such a defence



fence is the *os pubis* and the *os coxa* & *Ilium* to the Womb and bladder; others otherwise serve the uses of Nature, as the three little Bones in *meatu Auditorio* by firming the *Timpanum*, are a great help to the hearing; the *os hyodes* assisteth the swallowing, by managing the root of the Tongue and the *Epiglottis*. The *Rotula* serves the motions of the Knee, and the Teeth prepare the meat by Mastication, not a Bone but hath its particular end set out: There was a reason of the Temper, of the Magnitude, of the number, of the Substance, of the Scituation, of the Connection of them, the wise Creator as much shunning Superfluity as deficiency. Indeed the whole Fabrick is so full of Excellency that it would take up much time to express them; But that is not my business: The subject I have undertaken to treat of is their misfortune, and that is twofold, to be Fractured and Dislocated; that of Fractures I have proposed for my present Discourse, and that only in General, it being sufficient for my design.

To proceed Methodically, I shall begin with their definition, which according to *Galen, de methodo medendi*, Is *unionis sine continnitatis solutio quacunque in osse*, but this being too general, and taking in all cariosity and Ulcers of the Bones, which hardly belong to this head of Chirurgery: The moderns have more closely defined it to be *Offis divisio seu ruptura à causa violenter irridente*: But this likewise seems to me to be lyable to many exceptions, I shall name only this, *viz.* That a cut made into a Bone by a sword or a sharp Instrument, seems to be rather a wound than a Fracture: And for this Reason *Guido de Cantuaco* makes it to be *continuitatis solutio in osse non à re qualibet facta, sed ab ea qua continndis;*

The Authors definition of Fractures.

*contundit*; yet I must still beg pardon if I be not yet satisfied with this description, because it leaves out all such Fractures as are made by any accidental bowing of a Bone, either in a wrench, or any other case where without any blow or contusion of parts, the bone snaps in sunder, and then wounds the neighbouring Muscles, even to the thrusting of it self very often quite through the skin: These are (cases of Battail excepted) the most frequent of all Fractures, yet not without some violence to be reduced to any of these later definitions. I shall therefore chuse to define a Fracture in the following words, *It is a solution of continuity in a Bone suddainly made, either by contusion or flexure*: By contusion, I mean either a Blow by a blunt Instrument, or a pressure by a great weight, either of which usually bruisseth the flesh about the Bone, as well as the Bone it self: In contrassures indeed the bruise is not immediately upon the Fracture, but in the places where the blow is given: In Flexure there is seldom any bruise but what is made by the edges of the Bone it self, after it is snapped in sunder; all other Fractures are reducible to these.

Amongst the *Greeks* it was commonly known by the name of *Catagma*: I purpose not to trouble you with the nice distinctions in Fractures, nor yet with their various names. *Galen* in his Book *de method. medendi* complains, that in his time *non desunt ex Medicis Junioribus qui ambitiosè omnes fracturarum differentias propriis nominibus interpretantur*, there wanted not (saith he) young Physicians who affected to give proper names to all the several kinds of Fractures; *At non Hippocrates hujus fuit sententia*; nor shall I spend my time so: But according

to Galen do take the difference in Fractures to arise, Differences.  
 1. à figura. 2. à magnitudine. 3. ab ossium fracto-  
 rum varietate: First from their Figure, it is either  
 Right *que fit per longitudinem*, or transverse *per la-  
 titudinem*, or oblique which is as it were compound-  
 ed out of the two former. Secondly, à magnitudi-  
 ne according as the Fracture is greater or lesser.  
 The Third difference is *ab ossibus ipsis*, that is from  
 the Bones themselves that are broken, whether it  
 be the Arm, Leg, Ribs, &c.

Causes of Fractures internal there are none, un- Causes.  
 less it be *ab humoribus corporis erodentibus*, and  
 of that sort you may read many in *Skenkius, Fabr.  
 Hildanus*, and others: I my self have seen some,  
 and lately, but these being from Erosion are rather  
 to be called Ulcers with *Caries*, and therefore  
 more fit to be discours'd of amongst Ulcers of that  
 kind, to which I refer you.

Of Causes external there are many, as the too  
 violent assaults or strokes of all external things,  
 which may bruise, break, shatter or bend. In this  
 number of causes may also be reckoned falls from  
 on high, &c.

The Signs of a Fracture without a wound are Signs.  
 for the most part very evident; the *first* and most  
 certain is, when in our handling it we feel the pieces  
 of Bones sever'd a sunder, and hear them crackle:  
*Secondly*, the Impotency of the Member: *Thirdly*,  
 vehement pain: *Fourthly*, a distortion of the part;  
 also by comparing the one with the other, the  
 Fractured Member being shorter. But if there  
 be a wound joined to the Fracture, then if the  
 Bones thrust themselves not forth, yet you may  
 easily

easily know it to be Fractured, if you search with your finger or Probe. There is also a curvedness which may be reduced to Fracture; I have seen it in children often, as in D. C's. little daughter in the *Old-Baily*, and Mr. N's. Son in *Black-fryars*, and others: It is as it were when you break a green stick, it breaks but separates not, so is cured by a due Extention with little trouble to the Chirurgeon, or pain to the Patient after the Extention is made.

If the Fractures be *secundum longitudinem*, it will appear first by the unnatural thickness of the Member, then by the pain and inequality of the part.

Prognosticks.

In Prognostick or presage, a Fracture of the Bones cannot be without danger, for of necessity the Solution of continuity must be great. If a wound be made in a fleshy part, the wound is proportionable to the weapon that made it, & non ultra: But if the Bone be broken *propter Rigiditatem & continuitatem non potest frangi nisi totum frangatur*. The Fracture is more dangerous in a great bone than in a small, and the greater if the bones be broken, as the two Focills in the Leg or in the Arm, where the *radius* and *ulna* are; yet if in the middle of the bones, it is the less dangerous: Those in or near the Joint are more painful and difficultly cured, and if any slivers press upon the Nervous parts, ill accidents commonly follow. A Fracture with a wound is the most dangerous of all. As to the time of Cure, the lesser bones are perfected in 14, 18, or 25 daies; the bigger in 40, or 50, according to *Guido*: yet let me advise you not to be too hasty in taking them out of their Beds, for  
in

in some Bodies the generation of *Callus* is very slow, and a new distortion may happen, and ill accidents follow. I have been call'd in to consultation upon such an Accident, the Patient did recover, but by lying so long within doors contracted such an ill habit of body, as was not got off in a long while after.

In the cure of Fractures, Union is required; but that cannot be made, unless pain and Inflammation be prevented; For a Fracture of the Bones is not made without an Internal wounding of the *Periostium* and parts next to it, whence grievous pain arises, which stirs up defluxion, and is attended often with great Inflammation, and from the weakness of the Member many Excrements are made and received, which it is neither capable to assimilate, nor yet expel; and the mischief is the greater, by how much the Bones lye deeper within the Muscles, where they cannot be set by reason of the great quantity of flesh, interposing between them and the hand of the Artist: The Intention pursued in this case is the union of Bones, as I have already said, which is not performed by the first Intention, unless it be in little children, but by the second, viz. an intervening of *Callus*.

The Method I thereto propose, is first to joyn <sup>Intentions</sup> the fractured parts together; Secondly, to keep them of Cure. so joyned; Thirdly, to preserve the Tone of the part; Fourthly, to generate *Callus*; Fifthly, to correct Accidents.

That parts may be rightly joyned together, there <sup>1 Inten-</sup> is need of *Extension* and *Coaptation*; for in fractures, <sup>tion.</sup> especially

Extension.

especially transverse ones, the bones are commonly distorted, the rectitude of the Member lost, some parts are prominent, and others hollow, the Fractured bones lying one upon another, and so the Member made short, *quia muscoli perpetuo membrum trahunt versus suum principium*: for which cause extension is necessary, that the parts which are indirect may be brought right, and the parts that stick out be reduced to their Cavities. And although sometimes, the Member seemeth not to be short, as if it consists of two bones and one broken, or that the Fractured bones do not lye one over another, nevertheless you ought to make due extension in all Fractures, because they never lye exactly equal, and most frequently they ride one over another; The want of which Extension is one reason, why the Fractured Thigh bones hap to be so often shorter than they should be, as *Celsus* hath it in these words, *Si femur perfractum fuerit brevius erit*; his reason is, *Quia nunquam in antiquum statum revertitur*: And I find in *Galen*, that *Hippocrates* saies the same of the Leg and Arm, and withal tells us it is *nisi ante confirmationem extensio debita adhibeatur & comodâ deligatione ossium coaptatio servetur*; by which you may observe the fault is want of good Extension, and keeping the part in its right seat, else you shall hazard the starting again of the Bones, and thereby their Fractured ends may hap to be broken off, by mutual Attrition in the Act of joining together; and if they do chance to fall in again, between the Fractured bones, they will then hinder their uniting, and if those shivers slide outwardly towards the Membranes, they will cause extream pain; This Inconvenience is therefore to be shun'd by the help of Extension, but again

in

in Extension, there must be observed a mean, as *Vigo* notes to us, *ad magnam quidem Extensionem futurus spasmus valde suspectus est*. Yea sometime the very Muscles are torne a sunder, as *Galen* tells us, and *Albucasis* cries out *cave extensionem vehementem & compressionem fortem sicut faciunt multo stolidorum, multoties enim faciunt Apostema calidum & contractionem in membro*; by which it seems in his time there was such a people, who thereby drew sad accidents, as Convulsions and Inflammations upon their Patients: But yet if the Extension be less than it should, then as I said before the ends of the bones rub one against another, and are broken or not seated in their proper place; Therefore the bigger bones having large Muscles, which draw the Member forceably to their original, do require the stronger Extension, and such are the Thighs, Legs and Arms; and if both the Focills be broken, the more Extension the *Radius* requires, lest because it hath no Muscles to draw it upwards, its motion being only *secundum pronum & supinum*: In Extension it behoves us to observe *debitam figuracionem*, that the Member be extended in *ea figura que minimum facit dolorem* saith *Galen*, which is done if the Fibres of the Muscles be stretcht, according to their rectitude; children and such as are of a soft habit of body do best suffer Extension, elderly and dry bodies the contrary.

In the next place is to be considered the most reasonable time to reduce the Fractures, and herein we all agree, the sooner the better, and that to avoid the Inflammation according to *Celsus*, *Si in primis diebus non restauatur, Inflammatio oritur, sub qua difficile & periculosa vis Nervis adhibetur*: If at

When to be made.

the first or second day the Fracture be not reduced, it is in danger of Inflammation and Mortification, for indeed after the second day its supposed, the Fracture is accompanied with great defluxion, so yields not to Extension, without hazard of drawing such ill accidents upon it self.

Therefore *Fallop*, in his exposition upon *Hipocrates de Capitis vulneribus*, and by his Authority tells us what we shall do in such a case, *Si os non fuerit in suo loco*, saies he, *Ideo ad septimam, qui est primus Terminus Inflammationis, vel usque ad nonam, qui est secundus, debemus bene advertere, & oportet Impedire Inflammationem*, if the bone was not restored before the time of Inflammation, then we ought to attend till the seventh day, which is the first period of the Inflammation, or until the ninth day, which is the second period, and all this time we ought to restrain the defluxion, *vel per lenitionem doloris vel expressiorem & deligationem loci, lenimus autem Medicamentis, oleosis qua habent vim refrigerandi, per deligationem pluribus fasciis*, either by lenient Medicines, or by deligation: We lenifie with soft cooling oyls, we make our deligation or Bandage by many turns of the roulers, these are to be done until the Seventh or Ninth day; Inflammation abating there is opportunity for reducing the Fracture: The Instruments for Extension are threefold: First, the Chirurgeons hand for gentle Extension; and let him place his hand near the Fracture, otherwise he shall hurt the sound part, by too much compression, and not avail himself much in his Extension; Secondly, for the middle Extension are *funes* and *habena*, a sort of Bandage fit to pluck at in order to Extension. Thirdly; are *organa & machinamenta* Engins used often by us, but invented by the

Instru-  
ments of  
Extension.



the Ancients, and they are for the most strong Extension; but before you make your Extension, consider whether the Member be not Fractured in more places than one. An old Gentleman came out of the Countrey, by a fall going down *Ludgate-hill*, breaks his Right Arm a little above the wrist transverse, and near the bending of the Arm a second Fracture oblique, this double Fracture hath hapned to others in the Leg, it requires your circumspection, lest the one escape your sight, and the Member left deformed and weakned in its Action.

The Extension made; the Extenders are to be loosened gently, and the Operator shall with his hand endeavour as gently to press down the ends of the Bones, and joyn them smooth and even together; and if there be any little Shiver, that will not be placed even with his fellows, cut upon it, and take it out, you shall know the perfect Coaptation of parts by these Signs: First, if the fractured Member answer to the sound; Secondly, if by your handling of it you feel no inequality; and Thirdly, if pain be abated.

2 Coaptation.  
Signs of good Coaptation.

The Second Intention in Curing of Fractures is, that the parts brought together may so be preserved, and that is performed by Bandage, which ought to be so made, as not only to keep the parts so joyned together, but to defend them from Inflammation; and to this purpose I commend to you that of *Hip*. and from my own practice. It consists of 3 Roulers made of Linnen Cloath, not too coarse, lest by its hardness it offend the part affected, nor yet too soft and fine, lest it break; with the first Rouler you are to begin upon the fracture, and take three turns, then roule up-

2 Intention  
1 Rouler.

ward to the sound part, and so at the upper-part end this Rouler; it will steady the fracture a little, until the other Bandage be made, and restrain the influx of humors which might cause inflammation.

Second  
Rouler.

And the second Rouler as long again as the first, must be rould contrary to the first; so as if the first was made to the right hand, then this must be turned to the left: So that if the Muscles by the first Bandage were wreathed too much on one side, they now may be restored again to the other. This second Rouler begins upon the fracture, and after a turn there is carried downwards, that so you may press the influx of humor from the fractured part, and so having made three or four turns downward upon the sound part, you may roul upward again by the fracture, and making a circumvolution upon the fracture itself, pass upwards, until you come to the end of the first Rouler. And there *Hippocrates* terminates this second Bandage, because there is fear of the descent of humours *a parte superiori*, and these two Bandages do more defend the part from inflammation, than strengthen the fracture; but they being made, *Hippocrates* puts over them (about the fracture) compresses of Linnen-cloth three or four times doubled, of such length as to reach over the fracture, but so narrow, as that five or six might be placed over about the fracture, the distance of a finger one from another, and are to spread with a little *Cerot*, only to make them stick; these are called *Plagula* and *Splenia* from their figure, and do supply the absence of agglutinative Medicaments, and lessen pain by hindring the compression of the Bandage.

*Splenia.*

The

The third Rouler of *Hippocrates* fastens the said Compresses, and its first turn is made upon the fracture, the one head is carried upwards, and the other downwards: And you are to take notice, that the Bandages are to be drawn more straight upon the fractured parts than elsewhere, that the fractured part being more weak may be kept from defluxions.

Third  
Rouler.

*Celsus* in his Eighth Book and Tenth Chapter, proposes another way of Bandage, first he dips a cloath in red Wine and Oyle, and applied it over and about the fracture, and after he brings six Roulers, his two first are those of *Hippocrates*, and so rouled, over them, he brings a broad Linnen-cloath, spread with *Cerot*, to keep them close down, and because the fractured bone hath always a propensity that way, whither it tended when fractured; therefore saith he, You are always to put a Compress of Linnen-cloath dipt in Wine and Oyle, *Ei parti qua contraria est parti in quam membrum inclinat*, and over this he brings the four remaining roulers; so as the following rouler be rouled contrary to the former, and the third end *in inferiori parte*, in the lower part, *reliqua omnes in superiori terminum habeant*, all the rest end above.

*Celsus's*  
way of  
rouling.

These are the Bandages of *Hippocrates* and *Celsus*, men of the greatest authority in Chirurgery, and are followed almost by all that have writ since, and are of excellent use in fractures, in and near the Joynts, where there is fear of inflammation: But then in your Binding you must observe such a mean, as consists with the ease of the member bound.

Sign of  
good Ban-  
dage.

bound. A small and lax tumor appearing at the extremity of the member a day after, is a sign of good Bandage; but if there appear no tumor, or if the swelling be great and hard, then the Bandage is nought; the first shewing the Bandage not to be straight enough, and the last too straight, therefore you should often visit your Patient, to inform your self how the Bandage is.

Bandage,  
when to  
loosen.

But if no accident happen, you shall not unbind the fracture until the seventh day; and then if all be well, the Bandage will begin to slack of it self, and that is one reason, why fractures should be opened about that time; another cause may be, for that often in fractures there is an intolerable itching through the detension of humors, which are made sharp by deligation, perspiration being thereby hindred, and is wont to terminate in a most painful excoriation and inflamed redness: And in this case you are to bath the affected part with warm water, that the Matter may be evaporated, and then the member is to be bound up again; but now at this time you are to put *Ferula* or Splints instead of the *Splenia* or Compresses, but in fractures with great contusion, or in and near the Joynts, there I have continued the use of Compresses wet in white of Eggs; during the whole cure, with good success: And lately a youth about ten years of Age, labouring under a Carious Ulcer in his foot, the last great frost brake his Thigh-bone, according to the length of the member: This fracture was drest by my *Emplast. à Bolo* with *Splenia*, moistened with *Albumin. ovor.* this with Bandage, &c. as is proposed in this Treatise, confirmed the *Callus*; Mr. *Yowell*, sometimes a servant of mine, set his Thigh-

Thigh-bone for me, I being at that present otherwise imployed. But all the Ancients, after the seventh day did use Splints, and so have I where they might safely be used; for they not only keep the member steady, but straight, and of these some are made of Tin, others of Scabboard, Pastboard, and of wood sowed up in Linnen-cloaths; those of Tin do very well by reason of their lightness; those of Scabboards are apt to bow, and so is the thickest Pastboard, especially if they chance to be wet; and those of Wood are heavy and apt to inflame the member, yet through the Artists care they may be all used with good success, yea from the first day of the fracture: As in the case of a Reverend Divine, who brake both the Focils of his left Leg, within a few fingers breadth of the Ankle: This person laboured under an *Astma*, which grievously shaken the fractured member, wherefore I was necessitated to put on *Ferula* the very first dressing, and continued the use of them during the whole time of his cure; he lately told me that he never felt the least pain in that Leg, since I took off the last Emplaster, which is more than ten years since. But *Hippocrates* used them not until the seventh day, for before that day there was more need of hindring the inflammation, than of strengthening the fracture, *post septimam contra*, but afterward the contrary is required.

The third Intention in curing of fractures is in Third Intention.  
preserving the tone of the part; *Natura enim os unire nequit nisi pars sit sana*, Nature cannot knit the bones while the parts are distempered, and that cannot presently be removed; for though fractured parts be very well set, yet there will remain some

some *Cavernula*, which will be apt to fill with *Sanies*, and the part through its weakness can neither well assimilate nor expel, so is like to be burdened with Excrementitious humors: Therefore Phlebotomy may be here of especial use, and the keeping of the belly soluble by Clysters, or otherwise, and a slender diet prescribed; but this is the work of a Physician. Yet they not being alway at hand, I thought fit to mention it, and so to proceed to our own work, in keeping up the tone of the part, and hereto we have need of such medicines. *Quæ materiam influxam desiccant & inflammationem repellunt*, which dry up serosities and repel inflammation: And these in a word are *Astringentia*, of which we have choice. *Hippocrates* he used *Cerot*, then red Wine; *Celsus*, you have heard, he used Wine and Oile; others used Oile of Mirtils, Roses, red Wine, and whites of Eggs together; others again used whites of Eggs alone; and others added oils of *Myrtill. Balauft. Ros. Rubr. Sang. Dracon. Bol. Armen.* with a little Oil and Wine made up to the consistence of a linement, and applied upon cloaths over the fracture. By the use of this latter medicament, I cured a man whose Arm was sore bruised and fractured in many pieces, by the fall of a piece of Cannon, which brake loose in a storm, while we were preparing to lay aboard our enemy; over this Restrictive I applied the *Splenia* of double soft Lining with Bandage, as in Compound Fractures, and happily cured him. If the inflammation be not great, I then take off the *Empl. Diapalma*, and some of the forementioned powders, with a little oile of Myrtles and Vinegar, made up to the consistence of an Emplaster. This I call my *Empl. de Bolq*, which I spread upon cloath pretty

*Empl. de  
Bolo.*

pretty thick, and apply over the fracture, and this not only restrains the defluxions, but strengthens the fracture: They are all very good, if they be proportioned to the malady, and excellently preserve the tone of the part.

There is yet farther requisite to the performance of this Intention, position of the member, and that according to *Gallen*, *debet esse mollis*, the hurt part ought to lye soft, for that hard lying presses and causes pain and inflammation, *debet esse equalis ne distorqueat*, it must lye smooth or equal, because an uneven scite distorts or draws a-wry the part; *Sursum versus ne humores descendant*, it should lye somewhat high, lest a painful defluxion fall upon it; *Oportet congruam membri figurationem considerare*, It behoves, saith *Hildanus*, to consider the convenient figure of the member, that the Muscles be kept in their right scite, which is most free from pain, *hec autem est figura media*, which if it be not observed, *Exiguo post tempore membrum dolere solet*; What those pains are you possibly may guess, but no tongue can express, therefore you ought to handle the member very tenderly, and if the fracture be made *in cubito*, place it in a Case made of Pastboard, with a soft pillow under it, and bring it up to the breast with a fine Towel, or the like: But if it be the Leg that is fractured, we then place it in a bed, and in a Cradle, or upon a Pillow quilted in the midst with Juncks to support it, having a special care, that the hollow of the Ham and Heel be fill'd up, lest the weight of the Foot hurt the Heel, from whence grievous pain doth ensue, and sad accidents may, as some of us have seen, or at large may read in *Fabr. Hildanus*.

Position of  
the mem-  
ber.

The

Fourth  
Intention.

The fourth Intention is *Callum Generare*, to make *Callus*, which is to be endeavoured after the fear of inflammation is over, *Quia natura partis lesa non potest Callum Generare*, and that cealeth *circa diem septimam*, about the seventh day sooner or later, and if after that time the fracture is to be set, *possunt diversa & mala accidentia generari*, saith *Vigo*, yet after the seventeenth day of the fracture, I have set the Thigh-bone, and cured the Patient, who is living without any ill accidents.

How the *Callus* is made, you may read at large in *Fallopins*, in his exposition on *Hippocrates*; and though it be not bone, it is so hard, saith he, that if the member hap again to be broke, *potius in alia parte frangitur quam ubi Callus est Genitus*, it breaks any where rather than in the *Callus*.

Diet for  
the ingendering of  
*Callus*.

Two things are therefore required: First, that it's to be supplied with fit matter. Secondly, That that matter be not wasted from the edges of the fractured bones, *aut foras evocetur*, saith *Galen*; as for the matter to make *Callus*, most Authors do agree, that there be a greater liberty in diet; *At quo tempore* (saith *Galen*) *Callus gignitur, nutriendum corpus est cibis boni succi, & qui multum nutriant*, and that viscuous, his reason is, *Quia ossis alimentum crassum*, and thenceforth they commend at this time offall of flesh, and broaths of Kid and Veal, and the like which are boiled with Rice or Wheat; they also allow sweet Wines: But this liberty in diet I think is better forborn, for thereby we often see great obstructions arise, especially here, where our Patients are inclinable to feed plentifully; therefore in such fractures, where the Patient



tient is constrained to keep his bed, I propose a slender diet, and of such things as are of easie digestion, for without that liberty surely we cannot fail to compleat our cure; the bones having naturally a poriness in them, in which is always contained a matter fit for their nourishment, and *ex illo ipso nutrimento in fracturis Generatur Callus*, of that nourishment *Callus* is made: So if you be careful to prevent inflammation, and the like mischiefs, which disturb nature in her actions, and apply such remedies as may dry the proper nourishment into *Callus*, we shall not fail then of our desire, and they according to *Galen* ought to be Emplastick and moderately hot; for saith he, *Ea Callos tum promovent, tum augent; qua digerend vim obtinent, ea magnos jam Callos diminuant*: Therefore it behoves us with care to fit our Medicines to the age and constitution of our Patients: For those which are proper for men of ripe age, if applied to children and tender bodies, would so dry the *Callus*, as it would quite diminish it, and frustrate our cure: In children *Albucasis* commends to us whites of Eggs alone, or with a little *Farina Volatilis*; In those of more years, *Pul. Myrrha, Aloes, Acatia, Gum Tragacant. Thuris, Labdani, &c.* the Emplasters of *Paracels. Diapalma, Oxyrocceum*, severally or mixt: But this latter *Vigo* is very angry with, and says 'tis a Diabolical Emplaster, too hot for the Summer, and not very proper for Winter; *Vigoes* Emplaster, *ad ossium fracturas* is excellent, and so is our *Catagmaticum* in the *London-Dispensatory*. As to Internal medicines there are many, but I shall only recommend to you *Ostreclla*, and that by the authority of *Fabr. Hildanus*, who often experienc'd it, its Dose ʒj, in *Aq. Rad.*  
Simply-

*Simplyti*, and with this so given, he cured a Compound Fracture in one above sixty years of age, *at in juvenibus & succulentis non putat convenire osteocollam.*

Thus I have propos'd fit materials for the generation of *Callus*; now lest that the matter of which it is to be generated should be hindred from thrusting forth, it behoveth you to alter the Bandage, the member not to be rouled now so straight; by which means the nutritious juices will have liberty to flow in, and there by gradual digestion to thicken into a *Callus*: In the opening it, you are to consider whether the *Callus* generated be such as is required, how the fault of the *Callus* is to be remedied, if it be less or greater than it should be, you shall hear presently.

Thus I have done with Fractures in General, which if they be Simple, whether transverse, or *secundum longitudinem*, are cured by the same methods, only those which are *secundum longitudinem* require a more strict Bandage, otherwise the bones will be apt to gape: I hasten to the fifth Intention:

Fifth Intention.

Which is correcting of those accidents, which happening in Fractures retard their cure, and they are many; as Pain, Inflammation, Aposthumation, Gangrene, Itching, Excoriation, *Callus* more or less than should be, weakness of the member and depraved figure: If Pain invade the place, then Lenients are proper, and such as restrain defluxion, and hinder inflammation, and of which sort I have mentioned some, and for more variety, refer you to those who have written of a *Phlegmon*. If Gangrene

grene appear, slacken your Bandage, and foment the part with a *Lixivium*, in which hath been boiled *Scordium Abfinth. Centaur.* and the like, and you may apply over all a *Cataplasma* with Barley-meal, Lupines, with the tops of the forementioned Herbs, and the like powdered, adding Oxymell to it: But if Itching affect the part, then foment the part with warm water, which will give a breathing to it by the pores, or with salt-water, *Qua propter salem expurgat & poros aperit*; the Itching neglected, is wont to terminate in *excoriationem dolorosam*, a very painful excoriation, *cui occurrendum est exsiccantibus & refrigerantibus*, such are *Ung. Album, Camph. Nutritum, Populeon, &c.*

As to the *Callus*, it is sometime just, sometimes greater or lesser than just; if it be too great, you will perceive it by its bunching out; as also it will be painful to the touch or pressure, and besides it renders the part unapt for motion; in this case abate his diet, and make your Bandage more strict, and foment with discutients, and apply *Emp. de Cicutâ, de Ranis cum Mercurio, &c.* Callus to lessen.

But if the *Callus* be less, the signs are *quod ad motum redditur debilis*, the bone is weak, and if the part be toucht you scarce feel the *Callus*; and this was thought by the Ancients to proceed from slenderness of diet, or that it was not enough incrassating: But I think it rather proceeded from improper applications, or too straight Bandage; yet if the Patient be in years, and of a spare body, you may both increase and incrassate his diet, but withal slacken your Bandage, and invite forth the humors by warm water, not too hot; *donec pars rubescat* Callus to encrease.

cat & in tumorem attollitur, untill the parts a little swell *tunc enim desistendum*: But if the member be extenuated, it's either from the too straight Bandage, or over-much bathing with warm water; therefore you must now bath with fresh broaths, and good Embrocations, also a Pitch-plaster applied, and presently pulled off again, will by its adhesion to the hair and skin cause pain, and also an attraction of aliment to the part, and so the member is nourished.

Also after the fracture is cured, the member is too oft found to be of a depraved figure, by reason the bones were not well set, or through ill Bandage, or some inordinate motion, *aut propter inscitiam Chirurghi*. To help this, if the Patient be young and lusty, and the *Callus* but six months old; There is, saith *Celsus*, yet one refuge, that is, *fracturam de novo rumpere*; and in order thereunto, you are to foment the part with decoctions, *ex Althaâ, Cicuta*, and then *rursus os frangitur manibus vel digitis, impellendo seu comprimendo*.

But if the *Callus* be yet so hard, as it yields not, then says *Fab. ab Aq. Pend. Frango eum instrumento attrahente in diversas partes*: But this *Albucasis* a Chirurgeon, as bold as any, and one that had seen the effects of such rash undertakings, utterly condemns; says it is *operatio valde vituperabilis perducens ad mortem*: So advises the Patient, not to give ear to such vain people, but content themselves with such help as Emollients, Decoctions, Linements, and Emplasters may effect, which in truth is safer, if you consider that after the *Callus* is so confirmed, as it yields not to extension, than

I say if you should break it anew, or any other way separate it ; yet it would no more yield to a right coaptation, than a Hare-lip or my two fingers will to agglutination, without separating their dry body, which is not possible to be done in Bones.

I could here insert many of my Cures in Fractures of particular parts, but it would signify little more than I have already written, their cure consisting in the very same extension and coaptation, and are subject to no other Accidents : all which I have writ as plainly and feelingly, as if I had been performing the work in your presence. Yet as a rarity I shall tell you, that in *Bridewell* some years before the Fire, I was sent for to a poor Widow inhabiting there, whose little Son, of about eight years of age, playing about the Wharf, was struck by one of those great Cart-horses full in the face, striking the *Ethmoides* quite in from the *os Cribiforme*, without any great wound : The Boy lay for dead a while, and dozed longer ; it appeared a strange sight at first to me, his face beaten in, and the lower Jaw sticking out, nor did I presently know how to help him ; by what Art to make my extension ; But after a while, he a little recovering his senses, was perswaded to open his mouth. There I see the *os Palati* and *Uvula* carried so close back, that it was not possible for me to get my finger behind, and other way of extension there was none : Upon which I presently formed an Instrument bended up at one end, by which I got up behind the *Uvula*, then raising it a little upward, pull'd it forward with the *Ethmoides* into its former place very easily ; but I no sooner let go my extender, than the Body returned back again : Upon which

Observation.

I contented my self in dressing up the face with a restrictive *Cerot* to prevent influx of humors, and let him bloud, and within few hours after caused an Instrument to be made, whereby the great fractured Body was more easily brought into its natural place, and also kept there by the hand of the Child, his Mother and my Servants helping him some while, other way there was none. Thus by their and our care, the Tone of the part was preserved, and a *Callus* thrust forth, which as it hardened, the part grew stronger, and the face restored to a good shape, better than could have been hoped from such a distortion in that place. The Patient is yet alive and well.

Com-  
pound  
Fractures.

Thus have I done with that which concerns Simple Fractures. In a fracture with a wound, if neither the bone be bare, nor yet prominent through the skin, then you are by extension to bring the fractured ends of the bone together, as was proposed in the first and second Intention of Simple Fractures; and the lips of the wound are likewise to be brought together by Suture, if it be any-whit large, and not too much confused; which manner of dressing is contrary to what is taught in Gun-shot-wounds with fracture; the method being to be altered upon that occasion, for the reasons there alledged. Then endeavour as in our third Intention, to keep the fractured and wounded parts together by dressings, which may as well mitigate the pain, as keep off apostematation, by repelling the matter flowing to the part, and denying that already flown, *Qualia sunt Astringentia, Glutinantia*, of which sort I have sufficiently offered unto you, in the Discourse of Simple Fracture.

*Galen,*

*Galen*, by the authority of *Hippocrates*, recommends Cerot of Roses, but if their be no pain, you are to endeavour the strengthening of the fracture, and preventing defluxions by cloaths spread, with that composition of Astringent powders mixt with the whites of Eggs and red Wine, which is already propos'd : Then follows deligation of the part, and in this case Bandages are to be made of softer and broader Linnen than we use in fractures without a wound, that it may comprehend both the lips of the wound, and keep them down, yet not hurt them by its too hard compression, *Minus Astringenda sunt fascia quam si vulnus non adesset*, says *Celsus*, and therefore it is that *Hippocrates* and *Celsus* make so many Circumvolutions : *cum melius sit saepe circumire quam astringere*, (saith *Celsus* again) The third day they loose the Bandage, then *ferula vel non apponenda ne vulnus compriment*, saith *Albucasis* ; or if they be put on, *super vulnus apponi non debent* ; rather in these fractures do we use deligation, *pluribus fasciis* with many Roulers, saith *Albucasis* ; and so all along he goes in his Sermons of Fractures, as if he had been rather bred under *Hippocrates* or *Celsus* in Greece or Italy, than where he was ; But in truth this way of deligation is not only very troublesome to the Chirurgeon, to put on and off, but so very painful to the Patient, that it is almost impossible that he should ever be without a Fever, if his wound be every day to be so roul'd and unroul'd ; Therefore in these Compound Fractures we chuse rather to follow the method of some of the Moderns, who instead of these many long Roulers, make choice of two or three short cloaths, folded three or four times to give them the more strength, and of such

breadth as to encompass the lips of the wound and fractured parts, and of that length as to come once about the fracture, and so stitch together on the most convenient side ; and under these may be placed Compresses of fine Tow or double cloaths, which will not only keep the lips of the wound down, but fill up the inequality, and further the expulsion of Matter : And so the wound may be drest, and the fractured member relieved at your pleasure, without giving the Patient the pain to have the fractured member removed, or your self the trouble in rousing and unrouling so many long Roulers as the Ancients proposed ; and with this method I have cured Arms and Legs, so shattered by Splinters from Cannon shot, and with such loss of substance, as I even despaired of their Cure. But in some of these I have made use of *Hippocrate's Plagula*, and often for the more strengthening the shattered member, have been glad to make use of some Splints, from the first day, but so as their compression was gentle and equal, and so placed, that the lips of the wound might be kept even, and that the discharge of Matter was by them furthered : But if the wound be transverse, it then requires more caution, lest the Matter should at any time be prest back into the wound, and so not only dilate it, but foul the bones : Thus much for a Fracture with a wound, where the bones are not exposed to the Air, but if the bone be bare, and thrust it self out of the wound, and yet is again restored to its place, then let the wound be stitched and drest, as I proposed to you even now in the Compound Fracture.

A Commander at Sea valiantly fighting in the midst of the enemies Fleet; his Leg was fractured by

Observation.



by the fall of his Mizon-Top-Mast, it breaking his Leg transverse near the Ankle, the edge of the bone thrusting out through the skin. He not suffering the bone then presently to be set while it was warm, afterwards being swell'd and stiff, it did not yield to extension, but became painful and inflamed: After some few days he was brought to London, I was sent to him, he was of an ill habit of Body, subject to the Gout and dysenteries, and the Fracture accompanied with great defluxion, not in a condition to admit of Extension, therefore according to *Falopius* upon *Hippocrates* cited by me in this Treatise, I propos'd to his Chirurgion to proceed by Lenients, to mitigate pain, Inflammation, and by Bandage to hinder defluxion, which we did, and his Chirurgion continued that method a few days: The Accidents gone off, Mr. *Arris*, Mr. *Holtyer*, and my self, met Mr. *Pearce* his Royal Highness's Chirurgion at the Patients Lodging, with the Chirurgion of the Ship, we find the Patient in ease, taking off the dressings we see the Member in good temper, we agree to make Extension and reduce the Fracture, the Patient was of a dry tough Body, the Member yielding difficultly to Extension, we satisfied our selves with what we had done, doubting that upon a more forcible Extension, ill Accidents might follow (as an Inflammation presently did) we dress'd it up as a Compound Fracture, so as the wound was daily dress'd, and after some while a *Callus* thrust forth and united the Bones. That *Callus* confirmed and dried, we hastned the Exfoliation of the bare Bone, by a little *Aegyriacum* & *pulmyrrha* dissolved in *sp. vini* applyed hot upon an Armed Probe: Thus the Bone was Exfoliated and the Ulcer cured by the ordinary Intentions required

in them. Yet that inward leaning of the Bone, continued a weakness a long-time, as is usual where the Fracture hath not been timely reduced. To supply this, I cause a Bar to be fixed in his Shooe with Joints, this by a Bandage strengthened his Leg, whether he hath yet left it off I know not: But if the end of the bared Bone have thrust it self so our, as that without great force it cannot be restored to its place, *Tunc è duobus malis minus est eligendum*, then that end of the Bone which hath thrust it self so far out is to be Sawed off, and if this be done timely before a Gangrene hath seized upon the parte it may be performed with good success.

Observation.

In St. Clements parish behind the Church, some years since one Evening while I was preparing my dressings for the Setting a Fractured Thigh bone in a little Child, I was presently fetcht to assist one Mr. P. a Barber-Chirurgion in the Setting a Fracture of both the Focils of the Leg in a man of about Sixty years of Age, of a Tough dry body. There I met Mr. Tatham an endustrious knowing Chirurgion, the Fracture was oblique almost *secundum longitudinem*, and the *os Tibie* or greater Focil had shot it self out by the inside of the Ankle a great length; we endeavoured by a strong Extension to Reduce this Fractured Bone into its place, but the bone yielded very difficultly to our Extension: Yet we reduced it, then cleansed the wound of what we met of the Shivers or pieces of Bones, and brought the Lips of the wound together by Suture, hoping thus to keep the Fractured Bone the closer. Then we dress the wound with our digestive warm, and with an Emplaster of *diacalc.* malaxt

malaxt with *ol. Ros.* over it a mixture of *flor. Ros. rub. Balauft. Baccar. myrt. Bol. Armen. sang. drac. pulverizat. cum albumine ovor. ol. Ros. & acet. m. ad consist. mellis* : This spread upon a double cloath, and applyed over the Fractured Member and fastned by Bandage as hath been proposed in compound Fractures; but for the more strengthening the Fractured Member, we put on *Ferula* with soft compresses between them and the first Bandage, and having fastned them by three Ligatures, we placed the Member as much to the ease of the Patient as we could contrive, upon a Pillow quilted in the middle with Juncks to keep it steddý; but these great Fractures with large wounds and near the Joint, are always subject to grievous pain; and this much more, for that the Tendons and Musculous flesh was sore bruised, and stretcht by the great Extension, so was not likely to be attended with less mischief than afterward befell it : We Let him bloud that night and gave him an *Anodyne* draught to dispose him to Rest, but he slept little his pains continuing with much disturbance; a fever followed, and within two or three daies he became delirious, and in the absence of his attendance got out of Bed, the great Focil flew out as at first, and the poor man fell down on the floor as half dead: We were both presently fetcht, we took off the dressings and see the Bone distorted, the lower Stitches broken, and the wound of an ill Aspect, it tending to mortification without hopes of being any more reduced by a new Extension. Upon which consideration we resolved to Saw the end of it off, and to that purpose having prepared all things ready, we cut out the remaining Stitches, and turned the foot on one side towards the small of the Leg, thrusting the

the Bone more out; the one Sawing the end<sup>e</sup> off whilst the other with a *Spatula* defended the Tendinous flesh underneath from being wounded by the Saw: That done we cleansed the wound from the Saw-dust and Shivers of little Bones, which we had not discovered in our first dressing, they lying under between the distorted Bone and Membranes, by which ~~those~~ sad Accidents had been hastened: The wound thus cleansed we turned the foot right in to its natural place, there being no need of Extension: The great work was now, how to support the foot and keep it even with the Leg, there being so great a distance between them without any whole Bone, we scarified the Lips of the wound and washd them with *Spi. vin.* with a little *egyptiac.* dissolved in it, and dressing the ends of the Bones with Pledgets dipt in it, and prest out, we drest the rest of the Bone with *ung. Basilic.* with a little *ol. Terebinth.* warm, with an Empl. of *Paracels.* & *discalcith* mixt, and applyed it over the wound and parts about with a Comprefs and Bandage over that, as in compound Fractures, and placing the Leg as before upon a Pillow, he was again put in to his Bed, we committing him now to the care of his friends to keep him still, and ordered him Cordial Julips, &c. and after some hours Let him blood again. From that time his pains lessened, and his Fever and other ill Symptomes went off as the wound digested. But after some daies, the heel became very painful and was discovered to us Inflamed with an Ulceration to the very Bone. The Patient not permitting to have his foot stir'd, it had not been raised up, as for perspiration it ought to have been, whence this Ulcer became very troublesome to us. For a present relief we laid him upon his side, and drest the Ulcer with  
Lenients

Lenients to hasten separation of that Escar, and because the Patient grew soon weary of this position, which also was inconvenient for our dressing the great wound, we therefore designed an Instrument of Tin to receive his foot and leg, his heel to lye hollow in a place cut for the purpose, whereby we could daily dress it without disturbing the Patient, only placing him down lower toward the Beds feet, as the heel might lye over it; the side of this Instrument that came up by the wound, was to be taken off at time of dressing his wound, and afterward placed close again, whereby he was dressed without disturbing the weak Member. It lay also soft by the folds of Linnen we placed under, and between the Leg and Instrument, and was kept straight in hopes it might be supplied with *Callus*, but the wound became Sinuous, the Matter fowling the Bones, hindred the growth of *Callus*, and while we waited for Exfoliation, the Lips of the Ulcer became callous, which prolong'd the Cure: The Ulcer in the heel we digested, and after we found the Bone would not Incarn, we dressed it with *egyptiac*, with a little *Merc. Subl.* dissolved in it, by which dressing we hastened the Exfoliation of the Bones, and cured the Ulcer: The wound above was after the generation of *Callus* cured, as a *Fistula* with a carious Bone. The Patient lived many years after, but through the ill disposition of the Ulcer, the *Callus* was hindred in its growth, whereby the Leg remained the shorter almost as much as had been Sawed off of the Bone; yet this was better I suppose than to leave the Bone distorted until digestion, as in a such like case I have seen it.

But if the Bone be not so much distorted, as that  
you

you may come to Saw off the end of it, nor yet cannot reduce the Bone after the ordinary way, then you may with a Chizil-like Instrument, thrust between the Fractured ends of the Bone, and use it after the manner of a leaver for the reduction of the prominencies; But then it's supposed these fractured ends of them are within the wound, and not much over-shot one another, and the Fracture is transverse or oblique, otherwise this way will do little good; Nay possibly Rive up the piece of bone, and make another kind of Fracture, and grievously pain your Patient; and that you may do if the ends break off upon your hard and unsteddy Extension: Therefore it becomes us to be very wary in making this extension, else I say, we may grievously pain our Patient, and do him little good.

But to conclude, after your extension is made, and the Bone reduced, you are to feel if there be any Shivers of bones loose, and pull them out; and if you perform this operation in a fracture newly made, then you are to prevent Inflammation and all other accidents, by dressing up the Patient with such Medicines as hath been proposed in compound Fractures, and make your Bandage so as you may come to dress the wound, as occasion shall offer, with as little molestation to the Fractured Member as is possible, having a care you grieve not the tender parts with Splints, until the Inflammation be over, and the wound well digested.

Then afterwards 'tis to be endeavour'd, that the bones rob'd of their *periostium* may again be Incarnated or Exfoliated, which is the work of Nature, yet ought to be helpt by Medicines, which have a manifest

manifest hot quality and a peculiar faculty thereto, of which there are are enough in the Treatise of Gun-shot-wounds.

The Bones Exfoliated, the rest will do it self, or may be performed by *Epnloricks*, of which you may have choice in this Book.

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*ERRATA's of Wounds in General.*

Page 106. line 5. for *peruan.* read *peruvian.* p. 36. l. 21.  
r. *dip a pledgit* : p. 55. l. 12. r. *dabled about* : p. 82. l. 12.  
for *either* r. *other* : p. 126. l. 15. r. *until* : p. 43. l. 4. r. *indisposed*.

*ERRATA's of Gun-shot-wounds.*

Page 59. line 8. read *Ureters* : l. 23. for *lofs* r. *less* : p. 61.  
l. 24. for *digestum* r. *digest cum* : p. 106. l. 8. for *sub.* *3ij.*  
r. *3ij.* p. 14. l. 2. for *the Terebinth.* r. *Ol. Terebinth.* p. 16.  
l. 31. for *and laid* r. *lay* : p. 20. l. 19. for *their* r. *these wounds*.

There are other Literal faults occasioned by the hasty Printing this Treatise.

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Imprimatur,

*Guliel. Wigan.*

*Ap. 4. 1672.*

*THE END.*

you may come to Saw off the end of it, nor yet cannot reduce the Bone after the ordinary way, then you may with a Chizil-like Instrument, thrust between the Fractured ends of the Bone, and use it after the manner of a leaver for the reduction of the prominencies; But then it's supposed these fractured ends of them are within the wound, and not much over-shot one another, and the Fracture is transverse or oblique, otherwise this way will do little good; Nay possibly Rive up the piece of bone, and make another kind of Fracture, and grievously pain your Patient; and that you may do if the ends break off upon your hard and unsteddy Extension: Therefore it becomes us to be very wary in making this extension, else I say, we may grievously pain our Patient, and do him little good.

But to conclude, after your extension is made, and the Bone reduced, you are to feel if there be any Shivers of bones loose, and pull them out; and if you perform this operation in a fracture newly made, then you are to prevent Inflammation and all other accidents, by dressing up the Patient with such Medicines as hath been proposed in compound Fractures, and make your Bandage so as you may come to dress the wound, as occasion shall offer, with as little molestation to the Fractured Member as is possible, having a care you grieve not the tender parts with Splints, until the Inflammation be over, and the wound well digested.

Then afterwards 'tis to be endeavour'd, that the bones rob'd of their *periostium* may again be Incarnated or Exfoliated, which is the work of Nature, yet ought to be helpt by Medicines, which have a  
manifest



manifest hot quality and a peculiar faculty thereto, of which there are enough in the Treatise of Gun-shot-wounds.

The Bones Exfoliated, the rest will do it self, or may be performed by *Epnloricks*, of which you may have choice in this Book.

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*ERRATA's of Wounds in General.*

Page 106. line 5. for *pervan*. read *peruvian*. p. 36. l. 21.  
r. *dip a pledgit*: p. 55. l. 12. r. *dabled about*: p. 82. l. 12.  
for *either* r. *other*: p. 126. l. 15. r. *until*: p. 43. l. 4. r. *indisposed*.

*ERRATA's of Gun-shot-wounds.*

Page 59. line 8. read *Ureters*: l. 23. for *loss* r. *less*: p. 61.  
l. 24. for *digestium* r. *digest cum*: p. 106. l. 8. for *sub. 3ij.*  
r. *3ij.* p. 14. l. 2. for *the Terebinth.* r. *Ol. Terebinth.* p. 16.  
l. 31. for *and laid* r. *lay*: p. 20. l. 19. for *their* r. *these wounds*.

There are other Literal faults occasioned by the  
hasty Printing this Treatise.

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Imprimatur,

*Guliel. Wigan.*

*Ap. 4. 1672.*

THE END.